

LAND ECONOMICS

a quarterly journal of
PLANNING, HOUSING & PUBLIC UTILITIES

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MAY 1956

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The Paradox of Rural Land Investment in Britain

By DONALD R. DENMAN*

BRITAIN is still a land where tenant farmers outnumber men who till their own soil. Recent national surveys¹ show the percentage of let holdings to be 70% of the the total number of holdings in the country. Tenant status in Britain is sometimes misunderstood abroad in places where the word "tenant" can be socially demeaning. Tenant farmers are among the foremost agriculturalists of Britain, men farming wide acreages and controlling a commensurate wealth. Measured by their capital investment in agriculture, many tenant farmers are the peers of their landlords. Tenancy is securely anchored in statutory safeguards and the tenant is free to employ all his capital resources in farming enterprise instead of locking away a goodly part of them in land purchase and mortgage equity. In Britain the demand for farms to hire outstrips the supply.

Land Market Paradox

The enigma of rural economy in Britain is not the tenant but the landlord.

Economic advantage lies with the agricultural tenancy and shrewd business-headed farmers are constantly seeking landlords. The wonder is that landlords are still to be found. Evidence provided by recent studies in rural estate economy² shows by carefully-gathered statistics the paradox of a strong market for agricultural estates which have little or no power to earn positive incomes. Agricultural estates are in strong demand but limited supply. Landowners, even those of ancient title and lineage, seem to hold their broad acres in a prehensile grip.

The partition and annihilation of the large landed estates of Britain is a theme much talked of but hitherto inadequately studied. Broken estates, like broken homes, are popular events with news editors. Continuity of title and the creation of new estates are not thought worthy of newsprint and their story still awaits the telling. Official statistics are wanting. The studies in rural estate economy had as one of their objects the effect of the incidence of estate duty on agricultural estates. Some early figures bear evidence of the survival power of estates of old title. Unfortunately these figures cannot claim to be representa-

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¹ cf. Ministry of Agriculture and Fisheries, *National Farm Survey of England and Wales*, 1946, p. 20; and Department of Agriculture for Scotland, *Agricultural Statistics 1945-1949, Scotland, Part I*, 1952, p. 146.

² Undertaken by the Department of Estate Management, University of Cambridge, 1952-1955.

tive of the landholding pattern of the nation because there is no national statistic of landownership by which a selected sample could be tested. The best that could be done was a random selection from a promiscuous range of landowners and the sample so selected comprised 2,750 estates covering approximately 5,600,000 acres, or nearly 10%

of the agricultural land surface of Britain. Of these estates 32.7% were estates of old title and 67.3% estates of new title. Table I gives the percentages for the total number of estates and for classes of estates classified according to size.

Old title in this survey was defined as an unbroken inheritance since 1900; and

TABLE I

	100-500 acres	500-1000 acres	1000-2500 acres	2500-5000 acres	5000-10,000 acres	10,000 + acres	All Classes
<i>Old Title</i>	% 9.4	% 25.9	% 61.2	% 76.4	% 88.7	% 82.6	% 32.7
<i>New Title</i>	90.6	74.1	38.8	23.6	11.3	17.4	67.3

a new title was its counterpart. The year 1900 was chosen to distinguish between old and new titles because the turn of the century is a point of ready reference and in especial the year 1900 almost coincides with the introduction of estate duty in 1894. The inheritances of old title in the sample have therefore endured and survived the burden of the famous inheritance taxation of landed property in Britain. Moreover the old title estates which account for 32.7% of the total number, represent by their combined acreage 64% of the land area of the 2750 estates in the survey. Age attracts acres. The proportion of old titles to new titles increases rapidly once the 1,000-acre class is entered. Here is evidence of a propensity for survival among large estates and old inheritances unsuspected by many. A preponderance of new titles in the smallest-size class is probably due to the partition of large estates on sale. No certain statement can be made. How the small estates originated has not yet been discovered, and there is no evidence for stating

positively that these properties are the fragments of large inheritances torn apart under the impact of death duty. As many as 61.6% of the total number of estates have not suffered estate duty. Of these free estates 9% are estates of old title and account for 16.9% of all the estates of old title. This again is evidence of the staying power of the veterans.

Paradox appears when the income from agricultural land investment is considered. Close analysis of the incomes of the sample of estates representative of the size classes of Table I has been made.³ The estates in this sample covered 331,500 acres and their total market value was £7,730,000. Returns on this capital figure were expressed in three ways: as the yield of inflow, the yield of gross income, and the yield of net income. Estate inflow was narrowly defined as rental revenue. Revenue from farming and other enterprises associated with estate ownership was excluded. When computing the figure of rental revenue

³ University of Cambridge, Department of Estate Management, *Estate Incomes*, 1955.

an estimate of rental value was made for unlet farms in hand to the estate owner himself. Other properties occupied by the estate owner contributed to the total inflow figure the estimates of their rental values made by the income tax authorities. Inflow so calculated yielded on average 3.89% on the capital value of the land. Gross income was taken as inflow less all estate outgoings except expenditure on estate maintenance. Gross income yielded on average 3.62% on the capital value of the land. Net income was the gross income less the expenditure on estate maintenance; this yield on the capital value was negative, -1.02%. Capital value was defined as the open-market value of an estate as it stood at the time of the survey, excepting the value of timber and sporting enterprise where it was possible to separate them from a comprehensive figure of value. Land in hand was valued as land with immediate possession. Most values were the opinion of professionally qualified local men not associated with the estates. Some values were based on recent valuations for estate duty. Others were calculations of qualified agents in residence and one was the price the estate made at a sale held soon after the survey. The percentage returns are average figures for the sample. The minus figure for the net income yield has been influenced by a minority of exceptionally low incomes. The statistical mode clearly points to a 1% positive return and is probably the better guide of the two. This exiguous percentage agrees with the observations of another almost contemporary and quite independent study of estate incomes.⁴

These average percentages obscure the more generous reward offered by particular estates whose character is in keeping with their earning potentiality. Estate character influences net income. Many rural landed estates in Great Britain still display the features of the manorial fee and have a mansion house and village. Estates of this kind incur heavy maintenance expenditure in the upkeep of the ancient fabrics. The percentages just mentioned show what a significant part the cost of maintenance plays in estate finance. When the mansion house and village are sold away the percentage yield from net income often shows marked improvement; especially is this so in the wide open fertile country of Eastern England where the land is not over-capitalised by archaic farmsteads too thick on the ground. Sometimes maintenance expenditure is borne by the tenant. And yet under this most ideal of conditions the yield of net income on capital value is not likely to exceed 3.5% to 4%. This highest reward is most unattractive compared with the current yield of equities and government stock.

Estate Duty Deepens the Paradox

The hidden burden of estate duty deepens the paradox. Estate duty is a form of inheritance taxation and, true to its form, it is not levied upon an estate during the life of the owner. Nevertheless, it makes predatory incursions into estate income. Its inroad is often veiled because the fund provided to meet its eventual toll is not accumulated from estate income but from extra-estate investments. Moreover, the calculation of the incidence of future estate duty upon present estate income cannot avoid uncertainties. It is a calculation of a present burden contingent upon a future levy and at best is a carefully weighed

⁴ Stephen Cheveley and Owen Price, *Capital in United Kingdom Agriculture, Present and Future*, Central Agricultural Control, Imperial Chemical Industries Ltd. 1955, p. 19; and Country Landowners' Association, *An Inquiry into Agricultural Rents and Expenses of Landowners in England and Wales 1950/51, 1953*.

forecast. What estate duty in the future will be imposed upon an estate will depend upon the total fortune of the landowner, as the sale of estate duty is graduated to the size of total fortune. A prophecy of what a landowner's private fortune will be at his death cannot avoid being highly problematical and to make a general calculation may seem impossible. But a current study of estate capital⁵ shows how the private fortunes of landowners tend to bear a demonstrable ratio to the value of their landed estates. If this is once established, calculations of the present incidence of future estate duty will be more reliable because of the established relationship between estate duty and the acreage and value of the land. Even so these calculations will always rest on certain assumptions.

In the meantime, calculations have been attempted from the evidence of a few agricultural estates included in the estate duty survey mentioned above. These calculations were based on current estate duty rates, present land values and the value of the private fortunes of landowners at the last death. In other words, the estate duty suffered on the last occasion was recalculated in the light of known current facts. The amount of duty calculated from these presuppositions was translated and expressed as an annual burden on the land by the device of a sinking fund to redeem the capital levy. It was found that when the period of the sinking fund was 25 years, or the length of a normal generation, the yearly charge absorbed 47.3% of the average gross income of the estates. A probable interval between successive levies of estate duty has been estimated from past experience as 40 years, and the annual burden based on a sinking fund

over this period accounted for 22.6% of the average gross income of the estates. These hypothetical sinking funds in the actual event would have to be met from taxed income and the percentages are true only for the landowner who pays income tax at the standard rate; the percentages would be greater for men in the surtax range. On the estates selected for calculation the cost of yearly maintenance took 63.3% of the gross income. The miserable 1% return on capital invested in agricultural estates is thus liable to annihilation under the impact of estate duty; and the paradox deepens. What advantage is there in agricultural landowning? Why the sustained market for land when the rewards from income are so small or non-existent?

Profits, Possession and Pleasure

The paradox may be partly understood by considering the definition of estate inflow. The evidence for the 1% return on capital pre-supposes an estate inflow limited to rental revenue. Revenue on many agricultural estates is not in fact solely the contribution from rents. To rental revenue is added the profits of farming, forestry and other enterprises of the landowner undertaken on land in his possession. Profits from land in possession redress in some measure the slender returns from the rental revenue of the let land. Moreover, the market value of farm land in possession helps to explain further the paradox of land investment. During the war years and the subsequent boom period, the pulse of the land market for farms with possession was exceedingly vigorous. Farms with possession commanded more than double the price of let holdings.⁶ For this reason the greater the proportion of farm land in hand on an estate the

⁵ This work is being undertaken by the Department of Estate Management, Cambridge University and is financed by Counterpart Aid Funds; the results will be published early next year.

⁶ cf. O. T. W. Price, "Agricultural Property," *Farm Economist* Vol. vii, No. 3, 1952.

higher was the market value of the entire property; and the higher the market value of the estate the more sickly appeared the rate of return on that value from rental revenue. Estate profitability could therefore move in inverse ratio to the percentage on capital value yielded by rental revenue.

These explanations do not wholly resolve the paradox; for the property market is not shy of tenanted estates. Estates with tenants well secured in possession are purchased as well as estates with vacant possession. There is something in the ownership of land over and above rents and profits. Hunting, shooting and fishing, the more subtle attraction of amenity and the social dignity still lingering in a title to broad acres are not unimportant influences upon the land market. Men buy estates for the pleasures of ownership indifferent to the pitiable 1% monetary return from rents. Emotion and tradition must be reckoned with. The cold stare of the financier is not the only countenance to appraise the worth of the country estate. And these facets of the market make the paradox less puzzling.

Enchantment of Tax Concession

There is an additional explanation of the paradox. When first mentioned it seems to multiply the complexity. We have seen how estate duty can rob the landowner of his meagre income from rental revenue. But it is estate duty that plays the Puck and throws an enchanting light over the agricultural estate and gives it a compelling lure.

When estate duty was introduced in 1894 agricultural land enjoyed privileged assessment. Its value for estate duty was limited to the maximum of twenty-five years' purchase of the rental value as estimated for income tax. After 1910 this privilege was discontinued. Fifteen years

later it revived but the pattern was new; agricultural land was charged to duty on a scale lower than normal. In 1947 Sir Stafford Cripps simplified the principle by reducing the estate duty on agricultural land by 45% of the normal rate of duty and this privilege is still countenanced.

By transferring capital from other investments to agricultural estate a man may reduce almost by half the liability for estate duty of the sum transferred. The fortunes of landowners whose estates were used to calculate the return from estate income would at present rates of estate duty attract on an average a 60% levy. If the £7,730,000 represented by the market value of the estates were invested in industrial stock the estate duty would amount to £4,638,000; since the capital is agricultural land the duty will be £2,550,900—an alleviation of £2,087,100. Thus a substantial sum is preserved from estate duty. Now a capital fund equal in amount to the sum so preserved could be provided by financing a sinking fund from income. A sinking fund over ten years at 3% compound interest would amount to £1,815 per year. Such a figure would have to be found from the incomes of the estate owners each year. Investment in agricultural land can therefore be said to relieve income of the prevenient burden of estate duty. Relief of this kind may be looked upon in a positive way as the earnings of the agricultural investment. And these earnings can be expressed as a percentage of the capital invested in agricultural land. For full measure the benefit of the agricultural investment must take income tax into account and ideally the saving of the additional estate duty that a cash fund raised by a sinking fund would attract; a cash fund would itself be exigible and might indirectly add to the rate of duty on the land by increasing the principal value of the landowner's

fortune and lifting it into a higher grade of estate duty levy. Income tax influences the calculation of benefit because sinking fund contributions would have to be found from taxed income. The total benefit gained by agricultural land investment would be the amount of the sinking fund contributions required to provide a sum commensurate with the sum saved and the income tax and surtax which would have to be paid from income before the sinking fund contributions were available.

Purchase of agricultural estates is not the only means of reaping estate duty privilege. Capital investment in the improvement of agricultural land enjoys similar grace. Investors are encouraged to buy neglected estates and improve them. The hazards of these ventures are greater than the risks of land purchase because the value of the capital transferred may suffer an immediate drop on transfer. Money spent on agricultural land improvement frequently fails to enhance the market value of the land by a like amount. The benefits of investment in agricultural improvement must be discounted to allow for this possibility.

The magnitude of the percentage on capital investment which the saving of estate duty represents will depend upon the rate of duty levyable, the period of years over which the hypothetical sinking

fund is presumed to accumulate, the rate of compound interest of the sinking fund and the rate in the pounds of income tax or surtax payable by the landowner. The percentage is a function of these factors and can be written mathematically as

$$P = \left[\frac{9}{100} \left(\frac{rs}{20 - t} \right) \right];$$

where P = percentage earned on capital value;
 r = rate percent of estate duty without agricultural concession;
 s = annual sinking fund in £s;
 t = shillings in the £ of income tax and surtax.

Values of this function are given in Table II. The figures show how materially the estate duty concession beneficially affects the investment return from agricultural land and the tremendous advantage gained from this type of investment by investors liable for high surtax and high estate duty. Advantages gained would be greater than shown in the Table because the figures do not allow for the estate duty which a cash fund, set aside to meet the estate duty on the land, would itself attract.

Capital transferred from other investments to agricultural land improvement does more than win the liberal 45% estate duty concession. There is an additional privilege which enhances for

TABLE II

Estate Duty rate (r) 60%				Estate Duty rate (r) 80%				
Sinking Fund:				Sinking Fund:				
25 years		10 years		25 years		10 Years		
Tax rate (t) =		Tax rate (t) =		Tax rate (t) =		Tax rate (t) =		
9/-	18/-	9/-	18/-	9/-	18/-	9/-	18/-	
P =	1.3	7.2	4.2	23.4	1.7	9.7	5.7	31.3

the investor the attraction of the transfer. British fiscal policy in 1945 introduced what may be termed the principle of capital transposition; capital spent on improvements to agricultural land was permitted for income tax purposes to be regarded as expenditure from income and written off against income tax and surtax assessments over a period of ten years. A similar fiscal device alleviates the lot of the industrialist. But a man with surplus capital to invest, especially if approaching the declining years of life is more attracted by the ownership of an agricultural estate than by the hum and hazard

of industry, and for him the 1945 concession means the same tax concession as for the man fully committed to industrial investment.

In its fiscal setting this capital expenditure allowance, as it is called, is a subvention from the Treasury purse to agricultural land and can be looked upon as a positive counterpart of the negative estate duty levy. Table III gives figures for 17 estates totalling 87,626 acres and shows the relationship between the estate duty levied from the land, the amount spent on capital improvement and the tax rebate claimable.

TABLE III

Number of Estates	Acreage	Estate Duty	Capital Expenditure	Capital Expenditure per acre	Tax Rebate
17	87,626	£544,171	£137,504	£1.57	£114,721

The tax rebate is 83% of the improvement expenditure. This percentage varies in each case with the rate in the pounds of income tax and surtax; the higher the rate of tax the greater the benefit. The relationship of the tax rebate figure to the amount of estate duty is interesting. The improvement expenditure per acre in this sample is low, and yet the tax reclaimable is 21% of the estate duty levied. A wider sample of 38 estates, inclusive of the 17 and covering 200,000 acres, gives an average improvement expenditure of £3.3 per acre. At this rate the tax reclaimable on the 87,626 acres of Table III would have been £216,980, or 39.8% of the estate duty levied. If after ten years the expenditure on improvements were repeated at the higher rate of outlay, the tax rebate would amount to 79.6% of the estate duty levied.

Improvement expenditure thus attracts income tax rebate and estate duty concession. These two benefits may be added together and an impression obtained of the total advantage of transferring capital from other investment to agricultural land investment. An estimate of the contemporary fortunes of the landowners of 14 of the 17 estates of Table III points to a potential estate duty levy of 60%. At this rate of duty, expenditure on improvements at £3.3 per acre would by virtue of the 45% concession save £60,740 estate duty, which is 12% of the estimated entire duty. On an improvement expenditure of £3.3 per acre, the tax rebate would amount to £184,182. This sum, added to the £60,740 saving, gives a figure of £244,922 and would meet 51% of the estimated entire current estate duty. The capital spent on improvements—at the rate of £3.3 per

acre—on the 14 estates amounts to £224,964. To accumulate £244,922 at 3% interest over ten years would require a sinking fund of £21,300 per year. With surtax at 14/- in the £,⁷ this represents a gross figure of £71,000 per year. As a percentage of the £224,964 invested in improvements, this gross figure is 31.5% and is a measure of the virtual benefit gained by investing the funds in agricultural improvements.

Estate duty, the Puck whose enchanted spells lure men to invest fortunes in agricultural land, is ill-served by the two lesser goblins, estate duty concession and income tax rebate, because these two pull against each other. Receipt of benefit from the capital expenditure allowance is dependent upon a sufficiency of taxable income. Since the allowance is set off against taxable income, it reduces the net assessment of the income and the actual rate in the pounds of income tax may drop. This lowers the percentage which the virtual earnings of estate duty mitigation bears to the capital invested in agricultural improvement and land purchase. Put another way, the P-value is reduced as the figures of Table II show. There is a point of equilibrium determined by the circumstances of each landowner, beyond which it is not profitable to invest capital in agricultural land because the rate of income tax is reduced to vanishing point and the saving of a sinking fund payable out of untaxed income will not reap a profitable return on the funds invested; the P-value is unrewarding. Obviously the point of equilibrium is reached earlier by men of modest fortune than by the rich.

Cheap Capital for Agriculture

Investment in agricultural land is for many landowners in Britain a cushion

against taxation, in especial the imposition of estate duty. The heavier the tax burden, the more welcome is the cushion. And this accounts for much investment in estates whose rental revenues show little or nil return on the funds expended. The capital that wins the reward of tax alleviation is not formed from rental revenues and ploughed back into the land. Rental revenues are supine. Capital formation takes place in other enterprises. That is not to say that agriculture is entirely dependent upon outside resources. A landowner cultivating his own land can, from the profits of his farming enterprise, form capital for investment in land improvement, erection of buildings and land purchase. To do so needs much initial capital, even if farming a modest acreage. A landlord whose sources of capital are external to his agricultural estate and who, indifferent to the meagre reward of rental revenue, ploughs capital into buildings, roads, and land reclamation for the benefit of the tax concessions is providing his tenants with land and capital at a very cheap rate. Whereas the owner-occupier has to forego the earnings of the capital put into his land improvement or borrow funds at 6%, the tenant farmer gets like accommodation for 1%, or at most 2%. This is in some respects beneficial. Tenanted farms provide a low rung on the ladder of farming success and give to enterprising young entrants opportunities to enter the industry they would otherwise not have.

The landlord and tenant system in this way ranges industrial fortunes behind the British farmer. Admittedly, the tax concessions which play so salient a part in the drama of seduction can be counted as government subsidy to agriculture. But subsidy indirectly provided in this way is less objectionable than outright grant. It is at all events a reward only

⁷ The average tax rate for the 14 estates.

won by placing private fortunes at the disposal of agriculture. Industrialists are stimulated to purchase and save by the hope of eventual estate duty alleviation. And agriculture itself is supported by private fortunes and not state-financed mortgages.

In Britain this relationship between merchants, manufacturers and the owners of country manors is historic. Certainly as early as the sixteenth century the great estates of England were in many

places financed from the fortunes of the newly emerged merchant classes. The eighteenth century repeats the story. Victorian manors have their version of it. Now it is told again. The theme is ever the same: agriculture financed from industry. Only the modes vary. To-day the mode is a backward running movement. No one can foresee how future chapters will tell this tale. The final word will be written when private fortunes can no longer be made in industry; and not until then.

Communal Farming in Israel

By JOSEPH SHATIL*

Editor's Note. This article came to us through Marion Clawson, a member of our Editorial Council who for some years was with the United States Department of the Interior, and more recently with the Economic Advisory Staff in Jerusalem. Mr. Clawson is now Director of the Land Use and Management Program of Resources for the Future, Incorporated, of Washington, D. C. In making his recommendation for publication of this article Mr. Clawson stated: "I urged Mr. Shatil to write this article and I believe it is well worth the attention of *Land Economics*. The kibbutzim are indeed one of the distinctive features of Israel agriculture and relatively little about them is available in English. Mr. Shatil has tried to deal with their economic aspects primarily, rather than with their social characteristics. He has tried to present an objective statement to which no serious disagreement could be taken by students of Israel agriculture. Mr. Shatil has for many years been a member of Kibbutz Hazorea and is not only familiar with the kibbutzim but is identified with them. The article is thus an interpretation by one who knows and supports what he describes. The article does not emphasize the fact that most kibbutzim are closely identified with some particular political movement and that each major political movement has some associated kibbutzim. Kibbutz Hazorea is a member of the movement Kibbutz Haartzi, which in turn is part of the political party, Mapam. This party is left-wing, among Israel's political parties. I know that Mr. Shatil tried to describe the kibbutzim without political bias and, as far as I can tell, he has succeeded." Readers are directed to an article which presents a considerably different picture of the kibbutzim, to be found in *International Journal of Agrarian Affairs*, October 1953, by E. G. Mayer, "Collective Land Settlement in Israel."

* Kibbutz Hazorea, Israel

THE communal settlement in Israel is one of the unique characteristics of the agriculture of that country. By the end of 1953 there were some two hundred of these villages with a population of about seventy-two thousand. The oldest ones have been in existence forty to fifty years; but two-fifths of them were founded since 1948. The average settlement (kibbutz) is made up of about two hundred families; the newer ones are smaller than the average. Agriculture accounts for sixty to seventy percent of remunerative work and income; the remainder comes from various sources, mostly small industry. The communal settlements produce roughly one-third of all agricultural production in Israel, excluding the citrus produce. The social aspects of their communal life have received some attention from students of sociology. This article is concerned chiefly with the economic and agricultural aspects of their activity.

The Kibbutz and Its History

Communal settlements are collective enterprises. Farming and all other economic activities of a kibbutz are managed as one unit with a joint account. There are no individual households. The members eat in a common dining hall and have their other needs (clothes, laundry, tobacco, education, etc.) provided from a central source. Apart from a small yearly allowance (ten to fifteen dollars) they receive no cash. Work in the communal services is integrated into the general work organization of the settlement. Women are equal members in the organization, doing equal work and with an equal voice in kibbutz management. In most settlements the children of all ages from infancy through adolescence live in their own houses, all those of each age group living together in separate houses which combine living-

rooms with classes and other activities. The children spend afternoons and the weekly sabbath with their parents.

The kibbutz is not a cooperative. There are no entrance fees, no individual shares in the common property, and no individual accounts. If a new member is accepted, he is entitled to his full share in the expenditures from the general budget, and has full voting rights. On the other hand, if a member leaves the settlement, he has no claim on the common property nor for any other compensation. He will get some assistance to ease the transition to life outside the kibbutz. All ownership is invested in the group as such, independent of its temporary personal composition. Ownership is dependent upon membership without individual rights.

The basic ideas in the constitution of the kibbutz are purely voluntary participation and common responsibility. Anyone may apply for membership and the group is free to accept or to refuse his admission. Any member may leave, if he so decides, irrespective of his reasons. There are no punitive or disciplinary measures applied within the kibbutz apart from very infrequent cases of expulsion. The general assembly of all members makes decisions on major issues. It elects from among its members the executive officers and many committees. The assembly usually meets once a week. Decision is by a majority vote. The management of current affairs is in the hands of the secretariat which is composed of three to seven members (treasurer, farm manager, secretary, work-distributor, etc.) A number of standing committees (economic management, work distribution, education, health, cultural affairs, etc.) participate in the management and give assistance to the executive. There is a high degree of democracy within these groups. A member is sure that he can participate,

through his vote, in every important decision. The committees are responsible for the various aspects of communal life and have at their disposal considerable budgetary funds. In an average settlement more than half of its membership shares direct responsibility for operation of the settlement.

The socio-economic development of modern Jewish Palestine was very different from most other countries. There was a labor movement before there was an industry. The pioneering elements concentrated on the development of a Jewish agriculture as a fundamental necessity for a healthy society. In the first years of this century there was in Palestine no modern agriculture. The Arab fellaheen-holding was not a primitive form of agriculture but was reduced to primitive methods of cultivation and to starvation level of family income by centuries of misgovernment and exploitation. There was hardly a Jewish agriculture worthy of its name. About a thousand families lived in villages, cultivating chiefly fruit plantations which were subsidized by philanthropic institutions. The new Jewish worker, inexperienced in agricultural work and unaccustomed to the different climate, had to compete with cheap Arab labor. He earned scarcely enough for his bare existence. Under such conditions the raising of a family was impractical.

The first communal groups, which were founded at this time, had from the beginning a two-fold purpose; to ease by mutual help the difficult living conditions of the Jewish worker, and to attempt by new methods to develop a healthy Jewish agriculture. This combination of mutual aid and constructive economic activity is typical of the Jewish labor movement in Palestine as a whole. The communal groups were not the only ones striving for these general goals; rather they went

further in their efforts than most. They grew out of actual pressing needs of the Jewish worker. These basic motivations hold good for the communal settlements up to this day. They were never isolated from the main stream of thought and action in the community, like communal groups in many other countries. They always played a very active part in the general labor movement and in the life of the Jewish community as a whole. Out of 120 members of the Knesseth (the Parliament of Israel) there are today twenty to thirty members of communal settlements as representatives of different parties.

The new settlements proved their superiority over former methods of settling Jews in agriculture. They were aided by the Zionist institutions in spite of the latter's opposition to the principle of communal living. But they proved especially suitable for new colonization under difficult conditions and were cheaper than any other method of settlement. From the nineteen-twenties to the beginning of the forties, total capital invested for an average kibbutz family was 360 to 560 Palestine pounds. (In that period the Palestine pound was equal in value to the British pound.) The capital needed for an individual farm was always considerably higher. The settlements received their land from Zionist institutions concerned with hereditary tenure. Likewise, the institutions engaged themselves to supply the capital needed for basic investments under easy loan conditions. But there never was enough money in the Zionist fund to fulfill this promise and the settlements got the promised loans on the average about fifteen years after the establishment of the settlements. In the meantime, the settlements grew very fast and the needed capital was supplied by other sources under less favorable terms. From

the thirties, settlement loans never amounted to more than a quarter to a third of the total capital employed.

From that time the kibbutz has played an ever-growing role in Jewish agriculture. Up to 1947 the population of communal settlements grew faster than the population of the Jewish community as a whole. In that year they represented 7.5% of the Jewish population. In consequence of subsequent mass immigration—which doubled the population in four years—their share of the population dropped to about five percent by the early 1950s. The large reserve of pioneer youth was almost annihilated by the murder of European Jewry and most of the refugee immigrants in recent years were not prepared for community life and not attracted by it. This has been especially true of the immigrants from North Africa and the Middle Eastern countries. At the present time about one-quarter of the agricultural workers of Israel live in kibbutzim.

The settlements had a decisive part in the development of modern agriculture in the country. Their continuous efforts to select and to acclimatize new crops and plants, to improve livestock and methods of cultivation and of work had a far-reaching influence upon the whole of Jewish agriculture. In about forty years, agriculture in the settlements went a long way from very modest beginnings to its present situation, which may be compared with agriculture in developed European countries. They always played a very active part in the defense of the Jewish community, especially in the War of Independence. During its whole history, the kibbutz was an integral and important part of Jewish colonization which laid the foundation for the state of Israel.

Economic Principles

The kibbutz differs from a capitalistic enterprise not only in its social organiz-

tion but also in its principles of economic action. One may visualize it as a combination between a family enterprise which works for its own subsistence and a public enterprise which serves some civic purpose. In both cases the maximizing of profits is not the prime purpose but rather, in the first case, the wish to attain and to maintain a certain standard of living; in the second case, to accomplish optimal service to the community at reasonable economic cost. The communal settlement aims to fulfill certain national purposes, like new colonization, development of agricultural resources, increase of agricultural production, transition of people to work on the land, and the defense of the country. Together with these it wishes to attain a decent standard of living for its members. All these tasks have priority over striving for profit. A new kibbutz will prefer to settle in a new and undeveloped area rather than in a populated area where economic prospects would be better. The settlements will accept new members—and they have done so—independently of their economic situation and their present possibilities of employment. They will increase production and continue development so long as the average return pays minimum expenses of living and interest on outside capital. Frequently new settlements are placed according to strategic needs rather than to economic viability.

On the other hand, the kibbutz is limited in these efforts by its need for economic independence. It cannot make the consumer or the public purse pay for deficits, like a public enterprise can. It is in direct competition with private enterprise. It gets credits for development from Zionist institutions and from the State, but no subsidies other than those given to agriculture in general. The communal settlement is obliged to bal-

ance its yearly account—to strive for self-subsistence. Only within these limits is it free to follow its national tasks. A newly-founded settlement knows from its first day that it has to earn its own living.

These principles of economic action have two main consequences. First: the accumulation of capital of its own is very slow. There are, of course, good and bad times and good years bring profits to the kibbutz, too. The long years of inflation brought considerable gains in equity capital to older settlements because of their relatively cheap investments. But the communal settlements as a whole could never exploit times of prosperity as could individual farms. The second consequence is their policy with regard to the use of outside capital. They do not calculate, like a capitalistic enterprise, whether the credits employed will leave an addition to profit after interest. It is sufficient if a loan serves to develop the farm and makes possible the employment of additional workers. For a communal settlement there is no point in limiting growth and production to the most profitable measure. Its aim is not the maximum accumulation of its own capital but rather development and production in itself.

The balance sheets of most communal settlements show only five to ten percent of owned capital (even excluding value of the land, which is nearly always all rented from the Jewish National Fund). The remainder comes from loans and credits. It would be erroneous to measure their economic success by the low rate of capital accumulation because this is simply not their prime purpose. A kibbutz proves its economic viability and "rentability" if it serves the national economy and balances its yearly account. Furthermore, values shown in balances are far lower than actual equity values.

Older settlements show for each dollar of capital account (excluding land capital) a yearly turnover of eighty cents to a dollar and twenty cents. Settlements established during the later years show on the average for each dollar of capital account only fifty cents of turnover.

Production Incentives

It may be asked: what are the incentives of production for the individual in such a society? The individual member gets no direct material advantages from any special effort, nor does the settlement gain by its activities in a degree comparable with private agriculture. It may be questioned whether this collective enterprise does not tend to destroy the initiative and economic drive of its members. This system is very different from the usual ones—be they private capitalism or the Soviet system. How does it work, not with a few people and for a short period, but with tens of thousands of people and for nearly half a century?

First of all, there is no doubt that there are in the kibbutz quite different incentives. In the communal settlements in general there is an atmosphere of hard work, and idling is not tolerated. People who shy away from work will leave, since public opinion in the society will make it impossible for them to stay. Experience also shows that the climate of the settlement is favorable for developing initiative, be it of individuals or of groups. For thirty years it has been leading Jewish agriculture in agro-technical innovations and progress, in introducing new branches into Jewish farming, experimenting in different climates and soils and advancing mechanization. This has not been centrally directed. The settlements have received some help and instruction but the chief endeavor has been their own. Likewise, the dynamic striving within the settle-

ment did not come from the management. It is the general atmosphere of the kibbutz which gives encouragement to the individual member to develop his initiative and to try new things and ways. In this sphere there is a lively competition between settlements and between different branches of the same settlement. Successful innovations are accepted readily.

Various factors lead up to this conduct and they appeal to different kinds of people. You may not easily isolate them and weigh up their relative importance, neither for the individual nor for a community as a whole. A member of a kibbutz feels very much the owner of the farm. He has no share of private property in it, but neither have the others. He feels secure in his work because economic difficulties will be shared by the whole group. In illness, invalidism or old age, the settlement will come to his family's assistance. He is not afraid to identify his own interest with the interest of the settlement. A second important factor is public opinion. To be "a good worker" is a title highly esteemed and not easily gained. In these closely knit communities social prestige is doubly important, especially because there are no different material levels. There is competition "to keep up with the others" both for the individual, between branches of work and between settlements. Members or groups who distinguish themselves by innovations, high standards of efficiency, etc., gain very much in prestige.

Thirdly, there is a feeling of a "mission." People who enter a kibbutz know that it has certain nationally important tasks to fulfill. The success of the farm contributes directly to these tasks and its failures are not merely economic failures. People in communal settlements are ordinary people, not especially idealistic

or altruistic. In their regular working life they do not think much about the motivation of their actions. But in times of difficulties and crises there is a great importance in the feeling that their work has sense, and not only for themselves.

Lastly, there are certain material incentives. The member knows that only by his work and by the work of others may he attain a higher standard of living for himself and for his children. He is not free to acquire it alone, but knows that he may contribute to its attainment. He participates in the decisions concerning the allocation of total income for living expenses, for new investment, or for other purposes.

Naturally, there arises in this system "normal" and specific difficulties. People as individuals are more or less diligent, more or less suited to agricultural work. They prefer interesting and skilled jobs to monotonous and unskilled ones. Certain kinds of service-work, like sanitation and kitchen work have to be alternated between all members. Newcomers, especially from oriental countries, have to learn not only the work itself, but also how to work on a modern and highly-mechanized farm.

In spite of this, it seems that this combination of incentives works sufficiently well. It has proved valid not only for the generation of founders, but also for the second ("normal") generation which was born and educated in the kibbutz. However, the efficacy of these incentives seems to depend on an atmosphere of voluntary participation.

The "Combined Farm"

By force of circumstances the kibbutz developed an economic composition which may not be found elsewhere. It was adapted to meet conditions of colonization in Israel. However, it shows at

the same time an original solution of some basic problems of agriculture in other countries.

The communal farm combines various economic activities: (a) mixed agriculture with seven to ten larger or smaller branches; (b) non-agricultural enterprises, especially industrial; (c) consumption services for the population of the settlement which are integrated into the general distribution of work; (d) highly developed cooperation with other settlements in buying and marketing, transport, financing, etc. The first three forms take place within one economic unit. The fourth is voluntary in principle, but has in reality different degrees of obligation.

The kibbutz farm grew out of the need to settle a maximum number of people on minimum land-holdings, under conditions which would permit high productivity and a decent standard of living. In this country land was always scarce. The soil was neglected and depleted, but prices were relatively high and means very limited. Even today, in the state of Israel, there are only about 0.35 million hectares under cultivation, rather less than one million acres. These are less than twenty percent of the territory, which has a population nearing two millions. Big parts of the land need irrigation, but there are few cheap sources of water and power. Jewish colonization could not change the basic scarcity of land. It had to concentrate upon improving productivity of the soil as well as of the farmer.

The solution was intensive mixed farming within the framework of a large farm. Thus it was possible to avoid the agricultural and economic disadvantages of big one-crop farming as well as the low productivity of the small family-farm. Up to 1947 the average working family in a communal settlement had only 6

or 7 acres, about 10 to 15 percent of them under irrigation. Recently they received more land, but mostly for temporary cultivation. Such small holdings of land normally make for low production and low income. A communal farm has usually about a hundred family units which work together. Each branch is large enough to allow for a considerable measure of mechanization. A family on a separate farm might have on the average only one cow, 50 to 100 chickens, half an acre of vegetable garden and half an acre of fruit trees. Multiplied by a hundred, this is sufficient for rational and modern methods of production. There are other well-known advantages of mixed farming, like distribution of risk, mutual supplementary branches, high self-sufficiency in food-supply and a better distribution of the work during the year. This last factor is especially important for the kibbutz, which has to provide work for all its members at all times.

In almost all communal settlements there are seven main branches of agriculture: dry farming, green fodder, vegetable production, fruit growing, dairy, chickens and sheep. Their relative importance changes with local conditions. On the average each of these branches provides 10 to 30 percent of total income. Preponderance of one branch above this is very rare. Local conditions determine, too, the inclusion of additional branches: fishery on the coast, in lakes or in artificial ponds, flowers for marketing, bee-raising, etc. The tendency is toward variety of branches, insofar as their inclusion is advantageous.

About one-third of the income of an average kibbutz comes from non-agricultural activities. For a long time, lack of land and lack of capital—and especially the delay in the provision of settlement loans—did not allow the de-

velopment of agricultural branches in a measure sufficient to employ all workers available. The number of members grew rapidly, mainly by new immigrants. The settlements were forced to seek additional sources of work and income. Many of their members worked in public works and in construction, in fruit plantations, harbors, and the like. In the years from 1940 to 1954 industry grew to become the chief source of additional income. There were by 1953 about 350 industrial enterprises in the communal settlements, employing some 5000 workers. On the average each of them employs 20 to 50 workers, but a few have more than a hundred. Contrary to usual village industry they do not concentrate on food-processing but range over many branches of light industry. Some are joint enterprises with private capitalists, the settlement holding more than 50 percent of voting-rights. Furthermore, each settlement has its own workshops for metal and woodwork, repair of machinery, etc., which frequently undertakes outside work. Several hundred settlement trucks are organized in transport cooperatives for general haulage. Some communal farms have convalescent and vacation facilities for people outside the communal farm. In addition, outside work by men and machines is still carried on.

These additional branches strengthen the economic basis of the settlements. Thus more people can find a living on the same limited land resources. Average income increases because average income from industry is almost always higher than from agriculture. The settlement is no longer wholly dependent on agriculture with its seasonal risks. Urban industry in Israel is usually on a small scale, mostly not larger than in the settlements. The industrial worker in a settlement has also some advantages.

Food and lodgings are cheaper and he is his own entrepreneur. Settlement industries have no special difficulties to compete on the market.

About one-half of the members of a settlement are occupied in the communal services; kitchen, laundry, dressmaking and repair, nursing, education. However, this relation does not give the true picture. The services of a kibbutz provide not only for the usual needs of an individual household but for many other items which normally would have to be purchased. Dresses and shoes are not only repaired, but often made on the premises. Carpenter, blacksmith, plumber and electrician are all members of the settlement and work for its needs. The educational workers consist of nurses as well as the teaching staff of the settlement school. This high degree of self-sufficiency makes comparisons with outside life difficult. A kibbutz may improve its living standard without any additional cash expenditure, simply by transfer of workers to service branches. This was in the past almost always the cheapest method.

The worker in a communal service, like the worker in the productive branches, depends on the common work distribution. The work distributor receives daily the labor requirements from all branches and distributes the available man-power according to needs. Most members are "regulars" in some branch, but there are always seasonal changes, incidents of illness or other reasons which require transfer of workers to other than their usual places. Each branch is directed by a foreman and has wide autonomy in its inner allocation of work. Before the beginning of the agricultural year a general plan is prepared which shows estimates of income and expenditures for each branch and for the whole settlement; the use of physical resources,

like land, water, machinery, manure; a feeding plan for the livestock, and the distribution of the labor force during each month of the year. Settlements try to develop their branches in such a way that manpower needs will be equalized as far as possible. Usually, there are differences varying from ten to fifteen percent above and below the normal, in months of high and low seasonal demands.

The communal settlements are included in a wide net of cooperative relations. Their products are sold by marketing cooperatives. Most of their buying is done through other organizations, countrywide or local. There are closely interwoven relationships with agencies of the State, with Zionist institutions, with the General Labor Organization and with the kibbutz movement to which a settlement is connected. There is hardly a field of economic activity where some form of cooperation is not to be found. It may be added that a similar situation exists with regard to all other fields of activity of the kibbutz.

The Present Situation

The years from 1947 onward were for the kibbutz a time of very rapid but sporadic development. Agricultural physical production in communal settlements grew in five years by 125 to 130 percent, but the labor force only by about fifty percent. The former trend was reversed and population in the settlements grew slower than the population of the country, which increased rapidly by mass immigration. An important factor in the growth of production was mechanization. It was favored by big development credits and by the general inflationary trend of Israeli economy. This policy was on the whole successful. Production in communal settlements grew much faster than the

average, even though their share in agricultural employed persons declined. It is estimated that the real output of an agricultural worker in the communal settlements grew by about 50 percent from 1947 to 1952. Capital investment and output were much accelerated. In 1947, in the communal settlements 14.5 million Palestine pounds were invested and their output was 11.1 million Palestine pounds. Up to 1952 total investment was 72.5 million Israeli pounds and the output of that year amounted to 64.9 million Israeli pounds. The average gross income of a kibbutz family in 1952 was 3000 to 4000 Israeli pounds—according to real prices about \$1650-2200. Net income was on the average 40 percent of gross income. After interest the real income of a kibbutz family was 600 to 800 U.S. dollars a year, quite low in comparison with output. This relation between gross and net income seems to be typical; it is confirmed by the balances of the settlements during the last fifteen years, which show on the average 35 to 45 percent net income from gross income. In addition to other reasons, this is connected with the tendency to prefer the development of production over and above the limit of optimum profit.

Beginning with 1952 economic circumstances deteriorated. The severe devaluation of the Israel currency made new investments—chiefly of imported materials—very expensive. The expansion of credit by banks was stopped by government action. The general price level rose in 1952 alone by 60 to 70 percent and continued to rise. At the same time consumer buying power declined and selling prices for agricultural products did not rise proportionally with

production expenses. New members in existing settlements were relatively few and only a small number of new settlements were founded. There is marked divergence between the wish to further fast expansion, according to the development plans of the government for agriculture, and the economic possibilities and risks. It seems that circumstances will force a slower pace of progress in the near future.

One factor may be decisive after some years for again accelerating growth. Most settlements are up till now "one-generation" groups. Only a relatively small number of members come from the second generation, born in the settlements. In many of them greater numbers of children will start working as full members after finishing military service. Only very few of them leave their home settlement. This inner source of growth, together with young pioneers from youth movements, will in the future ease the chief problem, the lack of manpower, and allow again for a more rapid development.

The communal settlement grew out of the specific and unique conditions of Jewish colonization. But some of the problems it had to cope with are not limited to this country: such as lack of arable land, mixed or one crop farming, small- or large-scale farming, underemployment in agriculture and the need for additional sources of work, these and other problems. Jewish colonization could not build upon an agricultural tradition. This was for many years a great hindrance, but it allowed for more radical solutions. The experience of Israel may be interesting and significant for people of other countries.

The Forest Products Economy of the Pacific Northwest

By WALTER J. MEAD*

WITHIN the last quarter century important economic changes have taken place in the forest products industry of the Pacific Northwest. In 1929 Washington's lumber output, amounting to 7.3 billion board feet, accounted for 20 percent of all U. S. production. In the same year Oregon's 4.8 billion board feet accounted for only 13 percent of the national output. In the next 24 years, however, the position of the two states was more than reversed. In 1953 Oregon outpaced all other states in the production of lumber with about 8.5 billion board feet. This accounted for 23 percent of the total lumber output of the nation. Washington's lumber production had fallen to 3.8 billion feet, accounting for only 10 percent of the nation's lumber output.

The lumber industry has been the most important segment of the Washington economy and is today the most important segment of the Oregon economy. When a significant element in the economy of any state grows and declines it can have vital repercussions

on the economy of the state as a whole. It is desirable, therefore, to be aware of the economic trends in this industry. The purpose of this paper is to raise and attempt to answer four questions: (1) What is the past and present position of the wood products industry in the Pacific Northwest economy? (2) How are structural changes in the wood products industry related to availability of basic resources? (3) How is employment related to availability of basic timber resources? (4) What are the economic effects of the seasonal character of logging in the Douglas Fir region?

I. What is the Past and Present Position of the Wood Products Industry in the Pacific Northwest Economy?

Table I provides a first answer to question one. In 1950 Oregon's wood products industry accounted for the direct employment of about 15 of every 100 employed persons within the state. Of the remaining 85 percent, many jobs are indirectly related to the timber industry. Within this total industry classification, the largest single measurable

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TABLE I—TRENDS IN EMPLOYMENT IN THE WOOD PRODUCTS INDUSTRY AND ITS PARTS

	Oregon				Washington			
	1940		1950		1940		1950	
	Employment	Percent	Employment	Percent	Employment	Percent	Employment	Percent
Total Employment.....	388,798	100.0	576,401	100.0	593,972	100.0	839,773	100.0
Wood Products								
Employment.....	52,781	13.6	86,919	15.1	71,446	12.0	76,354	9.1
Forestry.....	1,234	0.3	1,960	0.3	1,113	0.2	1,684	0.2
Pulp and Paper.....	3,589	0.9	5,236	0.9	9,751	1.6	13,053	1.5
Furniture and Fixtures	2,884	0.8	2,781	0.5	2,393	0.4	3,043	0.4
Lbr. & Other Wood Products.....	45,074	11.6	76,942	13.4	58,189	9.8	58,574	7.0

Source: U. S. Census of Population.

segment is that of "lumber and other wood products."¹

In the state of Washington direct employment in wood products in the same year accounted for slightly more than 9 of every 100 employed persons. Here again, "lumber and other wood products" is the largest single segment in the industry. But in Washington lumber is only about half as important to that state's economy as it is in the Oregon economy; and pulp and paper production is about twice as important in Washington.

Over the 10-year period from 1940 to 1950 we find that wood products employment in Oregon expanded from 13.6 percent of total employment in 1940 to 15.1 percent of the total in 1950. This is in contrast to an opposite movement in Washington where wood products employment accounted for 12 percent of total employment in 1940, but only 9.1 percent of the total in 1950.

The change in the relative importance of the wood products industry in the two states is accounted for principally by a growth in "lumber and other wood products" employment in Oregon and a nearly constant absolute employment in Washington. "Lumber and other wood products" employment for Washington, amounting to 58,189 in 1940, accounted for 9.8 percent of total employment. But approximately the same employment in 1950 accounted for only 7 percent of the total.

Employment in forestry in both states expanded absolutely and in about the same proportion as total employment. Therefore, the percent of total employment in the two census years is about the same. Likewise, pulp and paper em-

ployment maintained its position in each state. Oregon's employment in furniture production, however, not only failed to expand with the economy but declined absolutely. Whereas 2,884 persons were employed in furniture and fixtures in 1940, the number had declined to 2,781 by 1950.

In Figure 1, plywood production in Oregon and Washington is shown. The production of plywood has been dependent upon a supply of large old-growth timber. With the diminishing availability of this resource in Washington, leadership in plywood production finally shifted to Oregon in 1953.

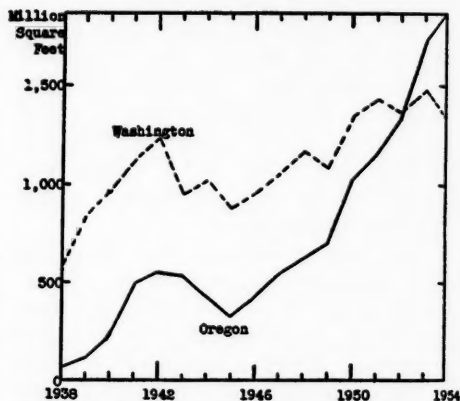


FIGURE 1—DOUGLAS FIR PLYWOOD PRODUCTION: OREGON-WASHINGTON ($\frac{3}{8}$ " basis)

Source: Douglas Fir Plywood Association

The center of lumber production shifted for reasons that are clear. Virgin old-growth timber was cut first where it was most accessible. The Puget Sound water-way provided easy access to and transportation of lumber from Washington's Douglas Fir region. This area's timber was, therefore, first to be cut. With a large portion of the most accessible timber removed, and second growth not yet ready for harvest on a similar basis, the center of production moved to Oregon which has the last remaining

¹ This term includes the following sub-industries; logging, sawmills, planing mills, cooperage stock mills, excelsior mills, millwork plants, plywood plants, wooden box factories, cooperage plants, wood preserving plants, and wood products not elsewhere classified.

large source of virgin old-growth timber in the United States.

II. How Are Structural Changes In the Wood Products Industry Related to Availability of Basic Timber Resources?

The data presented above suggests the hypothesis that with the diminishing availability of an area's accessible timber resource, that area will shift to the production of more final and less primary products from its modified resource base, and leadership in the production of primary products from that resource base will shift to other areas. The production of lumber and plywood is directly dependent upon the available timber resources, but large-scale pulp and paper production can be obtained from a relatively small timber resource base. For example, Oregon with the largest timber resource of any state in the union ranks 17th among states in terms of payroll and 20th in terms of investment in pulp and paper production. Washington with a smaller resource base ranks 9th among states in both pulp and paper payroll and investment in productive facilities. And New York, with a relatively small timber resource base, ranks first in pulp and paper payroll.³

The shift in emphasis from production of primary to final products as an area harvests its most accessible high-quality timber is further illustrated in economic data for 1927 to 1939 from the United States Census of Manufactures. Oregon lumber production in this period expanded by 19 percent while Washington production declined 42 percent. Whereas lumber production is limited by the resource base, there is some flexibility in the planing mill activity in which an area may engage. As the large saw timber accessible to Washington mills declined, producers lengthened their pro-

duction process to include planing mills. Such an extension of production was not as urgent in Oregon with its larger remaining saw timber stands. Thus, in Washington, while lumber production was dropping 42 percent, payrolls (deflated) in planing mills increased 90 percent. But in Oregon, with lumber production up 19 percent, payrolls (deflated) in planing mills were approximately constant.

Shingle production, like lumber and plywood, requires an adequate resource base. Therefore, over the 10-year period from 1929 to 1939, while Washington's shingle production remained constant, Oregon increased output 131 percent.

In pulp production, conversion in the Washington economy to more final products and fewer primary products is further illustrated. In the period from 1927 to 1939 wood utilization in Washington progressed primarily through increased pulp and paper production. Wages (deflated) in pulp production expanded in Washington by 194 percent, while in Oregon wages (deflated) expanded only 14 percent.

III. How Is Employment Related to Availability of Basic Timber Resources?

The foregoing discussion has illustrated the shift from primary to secondary production when an industry is confronted with a declining resource base in the form of accessible saw timber. The net result of such a shift shows that greater employment may be obtained from a given resource input. To illustrate this point one may consider possible employment and income generated from a unit of log production. In the early history of Pacific Northwest logging, a given log was cut into large cants and was exported in this form, thus providing employment and income from logging and limited sawing only. As saw mills were

³ *Pulp and Paper Magazine*, 1954 Review Number, XXVIII, 119.

added, the same logs provided additional employment. And as planing mills were added further employment and income was generated.

The process of cutting a log into finished lumber necessarily leaves certain residual ends, slabs, rejected lumber pieces, saw dust, planer residual, and bark. Therefore, still on the basis of constant log input, a productive process may be extended to include utilization of more of the log's residual. With the development of barking and chipping equipment slabs, ends, and rejects from lumber may be chipped and used in pulp and finally paper and paper-board production thus creating further income and employment on the basis of a constant log input. Further, hardboard plants may use additional residuals. As new uses are found for products made from bark, employment and income generated from given log production in the area may continue to expand.

In view of the foregoing, the following questions may be raised: How much employment in Oregon and Washington results from a given unit of log production and what change is taking place over time? Accurate data are available for only 1940 and 1950 from the United States Census of Population. Two points are clearly illustrated. First, employment data indicate that Washington is far ahead of Oregon in utilization of its timber resource. In 1950, Washington's forest products industry employed more than 17 persons for every million feet of log production. But in Oregon only 11 people were similarly employed. Second, the trend over this 10-year period clearly illustrates the employment effect of progress in wood utilization. Here again Washington's record is far better than Oregon's. Through extending the production process on the basis of a given unit of log production, Washington ex-

panded employment by nearly 20 percent, whereas Oregon expanded employment by only about 12 percent.

The increased employment per unit of log production is the result of three forces at work. First, there is greater utilization at the mill level. Greater utilization simply means that there is increased output from a given log input. For example, the development of a productive process and a market has resulted in production of Pres-to-logs utilizing some material formerly considered valueless. Also, debarking and chipping developments have reduced the flow of slabs and ends into the burner, sending more of this material to the pulp mills instead. The Pacific Northwest Forest and Range Experiment station has estimated that 30 percent of the raw material used by Oregon and Washington pulp mills is in the form of chips made available from lumber and veneer production. Likewise, the production of hardboard and softboard may utilize material formerly considered economically useless. Such technological developments can increase employment and income resulting from a constant log input.

Second, the productive process has been extended in the Pacific Northwest region to include additional products made from wood such as finished lumber, doors, furniture, etc.

But there is a third factor involved that works in the opposite direction, limiting the direct employment resulting from a given unit of log production. As machinery is developed that economizes on the use of labor, that is, makes labor more efficient, it will be possible to produce lumber or other products with less labor directly employed in the industry. The introduction of the high speed band saw replacing the slower circular saw, for example, resulted in greater lumber

production per man-day. Technological advances of this order should be clearly distinguished from other technological advances which utilize material formerly considered waste. The increase in employment from 1940 to 1950, therefore, is the result of significant increases in utilization, and extensions of the productive process, offset in part by technological advances which increase the efficiency of labor.³

Thus, with continued efforts toward greater utilization at the mill level and continued emphasis on extending the productive process in wood products, it is possible for an area to expand its income and employment generated from a constant or even slightly declining resource base. Even though log production in Washington dropped by 11 percent from 1940 to 1950, employment increased by 7 percent. Log production in Oregon by 1952 reached an all-time high of 9.8 billion feet, and there is considerable doubt that the state's timber resources and growth capacity will be able to provide a continued expansion in log production. Should log production become stabilized at this level, the foregoing analysis indicates that employment, even though based on a constant log input, may continue to expand.

IV. What Are the Economic Effects of the Seasonal Character of Logging in the Douglas Fir Region?

By most standards the Pacific Northwest would be judged fortunate in having its large stand of virgin old-growth timber, as well as what may be a more important resource: favorable conditions for growing timber on a perpetual basis. Income conditions in the Northwest closely reflect the area's natural ad-

vantage. In June of 1955, Oregon's labor force employed in manufacturing enjoyed the highest average hourly wage in the nation: \$2.30 per hour. Since the United States as a whole is a high-income nation, Oregon's distinction was enviable. Oregon led the second highest state, Michigan, by nine cents per hour and exceeded the average of all states by forty-three cents. Washington occupied fourth place with \$2.16 per hour.⁴

The high average hourly wage rate prevailing in the Pacific Northwest is primarily the result of the region's favorable timber resource position. The average hourly wage rate for "lumber and other wood products" workers was \$2.44 per hour in June, 1955.⁵ And, as revealed in Table I, 7.0 percent of all workers in Washington and 13.4 percent of all workers in Oregon were employed in this high-wage industry.

But while Oregon enjoys this high-wage distinction, it does not follow that the annual income of residents of Oregon is also among the top in the nation. In 1954, residents of Oregon with \$1,757 per capita personal income ranked eighteenth in the nation and actually \$13 below the average of all states. Washington, with \$1,949 per capita personal income, stood in tenth place. Among the four Far Western states, Oregon was at the bottom of the income ladder, standing \$337 below the average for this group.⁶

The reason for this seeming paradox is to be found in the seasonal nature of the Oregon economy, a factor also closely related to its natural resource endowment. Production and employment in logging, and to a lesser degree in sawmilling, are related to weather condi-

³ U. S. Department of Labor, *Monthly Labor Review*, December, 1955, LXXVIII, 21, 536-43.

⁴ State of Oregon, Unemployment Compensation Commission, *Labor Market Letter*, June 1955, VIII, 4.

⁵ U. S. Department of Commerce, *Survey of Current Business*, September 1955, XXXV, 16.

⁶ United States Department of Labor studies of productivity from 1909 to 1953 indicate that in all manufacturing industries output per man hour increases over three per cent per year. See *Monthly Labor Review*, Jan., 1956, LXXIX, 3.

tions. Logging operations in the Northwest are regularly halted during several months of very wet weather in the winter season and occasionally during dry periods of the summer season. Thus, while the average hourly wage rate for a lumber economy may be high in the nation, annual income is well below top position.

The seasonal employment pattern of the Northwest is graphically illustrated in

Figure 2.⁷ Employment in both states characteristically reaches its seasonal peak in the summer months of August or September, falling to a low point each January. Oregon's seasonal employment pattern is particularly unfavorable. Only 84 percent of those persons normally

⁷ Employment data includes only workers covered by unemployment compensation. Agricultural workers are the largest group not covered.

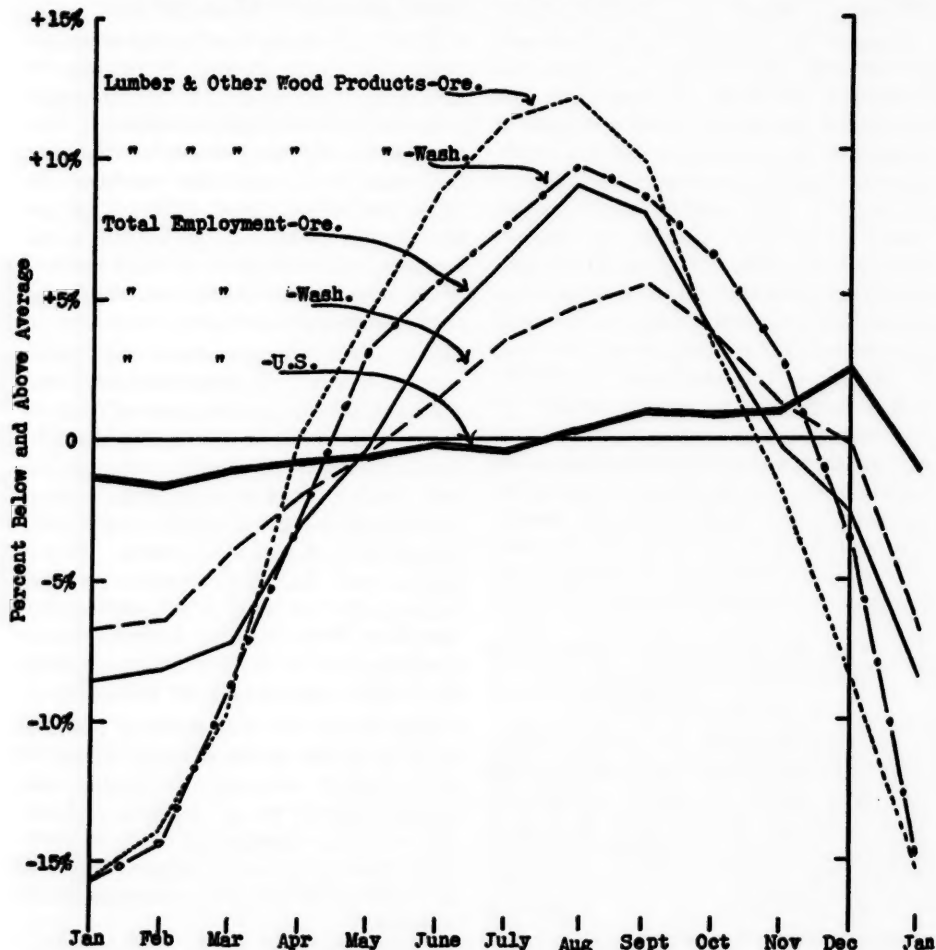


FIGURE 2—SEASONAL FLUCTUATIONS IN EMPLOYMENT
(Based on 1948-1953 experience)

Sources: United States Department of Labor, State of Oregon Unemployment Compensation Commission, State of Washington Employment Security Department.

employed in August still have employment in January. Washington's seasonal pattern is less severe. Peak employment occurs in September and by January, 88 percent are still employed.

For the U. S. as a whole the seasonal pattern of employment is much less pronounced. The low level of employment comes in February when employment falls to 97 percent of the December high. Peak employment for the nation occurs in December, reflecting the Christmas period. Though the Christmas period also is reflected in the Oregon and Washington pattern, it is the lumber industry that dominates the Pacific Northwest seasonal pattern. Oregon's seasonal pattern reflects the fact that January employment in "lumber and other wood products" normally falls to 75 percent of August employment. In Washington once again we find a slightly less severe seasonal pattern. "Lumber and other wood products" employment characteristically falls in January to 77 percent of the August high.

Several reasons may be offered to explain why Oregon has a wider seasonal fluctuation in employment than is found in Washington. First, as is indicated in Table I, employment centered in logging and lumbering is nearly twice as great a percent of total employment in Oregon. Secondly, also as is shown in Table I, pulp and paper production is nearly twice as important in the Washington economy, and there is no seasonal employment pattern observable in the pulp and paper industry. Third, the "lumber and other wood products" industry in Washington shows less seasonal fluctuation than in Oregon. This may be accounted for by Washington's extension of production in secondary lumber products compared to Oregon's greater emphasis in primary products.

Another reason may be found in terms of the stable operations of the Weyerhaeuser Timber Company in the Washington economy. This large producer occupies a more important position in the Washington economy than it does in Oregon. In its lumber division branches, Weyerhaeuser has a much more stable pattern of employment.⁸ The low employment level for Weyerhaeuser is 95 percent of the company's peak seasonal employment. This employment fluctuation is much less than is characteristic of either the "lumber and other wood products" segment of the two states' economies or indeed either of the two states as a whole.

The seasonal fluctuation is one of the major problems of a timber-based economy. The problem will become less acute as individual logging companies are able to make timber available in lower elevations for winter logging, following the Weyerhaeuser example. Also, the employment pattern will become more stable as additional all-weather roads are constructed leading into winter logging operations.

A further contribution to employment stability in the forest products industry will be made as the production process of the industry is lengthened to include more secondary products such as pulp and paper. Finally, if efforts to promote economic development of the region concentrate attention upon the seasonal problem with the result that seasonally stable or counter-seasonal industries enter the economy, greater employment stability will follow. To the degree that the seasonal employment pattern is leveled out, the region will more efficiently utilize its labor resources.

⁸ The lumber division consists of all woods, sawmills, plywood and related operations but not including pulp and paper production.

A Critical Analysis of Some Aspects of Interstate Commerce Commission Rate Policy

By HARVEY C. BUNKE*

“**E**ducational campaigns” sponsored by the nation’s railroads have long advanced the proposition that many elements of federal rate regulation are obsolete and injurious to the development of a rail system consistent with the nation’s economic needs. Research by some writers of professional stature appears to substantiate this proposition. Foreboding a bleak future for the railways, these writers counsel major changes in transportation policy. And among the most frequent admonitions are those associated with the rate-making process.

Although rate regulation has been a source of irritation since the enactment of the 1906 Hepburn Act, in recent years a clause contained in Section 15a of the Interstate Commerce Act, the rule of rate-making, has proved especially vexing to rail management.¹ This statutory provision, sometimes referred to as the “effect of rates on the movement of traffic clause,” admonishes the Interstate Commerce Commission to consider changes in traffic volumes that are likely to accompany the effectuation of rate modifications proposed by management. A broad interpretation of this clause allows Commission discretion to be an important factor in revenue cases and provides a basis for the charge that management’s ability to administer pricing

policies is unduly restricted.² It is the purpose of this paper to examine and make recommendations concerning several aspects of federal rate regulations. We shall be interested in looking rather closely at recent and present Commission policy, but first it would seem essential to discuss the economic criteria for successful rate-making.

Economic Criteria

Policy appraisal is most productive when standards of analysis are clearly defined. Transportation economists are true to a long tradition when they hold, at least as a first approximation, optimum resource allocation as the ultimate desideratum. Beyond this point, however, standards employed by transportation economists are sometimes unclear, and one must look to the writings of “pure theorists” for the derivation of criteria useful to the assessment of rate policies and their administration. Since the famous contributions of Hotelling³ and Montgomery,⁴ a number of welfare and a few transportation economists have subscribed to the thesis that optimum factor allocation is attainable only through marginal cost pricing.⁵ The railroad industry is one of decreasing

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¹Section 15a of the Interstate Commerce Act provides that the Commission should give due consideration to “. . . the effect of rates on the movement of traffic . . . to the need, in the public interest, of adequate and efficient railway transportation service at the lowest cost consistent with the furnishing of such service; and to the need of revenue sufficient to enable the carriers, under honest, economical and efficient management, to provide such service.”

²C. S. Dearing and W. Owen, *National Transportation Policy* (Washington, D. C., Brookings Institution, 1949) p. 273. For a discussion of the transport industry’s views on this subject see also; Transportation Association of America, *Sound Transportation for the National Welfare* (Chicago: 1953) pp. 23-27.

³H. Hotelling, “The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates,” *Econometrica*, July 1938, p. 242.

⁴R. H. Montgomery, “Government Ownership and Operation of Railroads,” *Annals*, January 1939, p. 137.

⁵R. L. Dewey, “Criteria for the Establishment of An Optimum Transportation System,” *American Economic Review*, Papers and Proceedings, May 1952, p. 644.

costs, these writers point out, and therefore the demand and average cost curves of the firms will intersect, if at all, above and to the left of the point of optimum capacity for the plant of most efficient size. It is argued, therefore, that regulation requiring rates to equal marginal rather than average costs would increase resource efficiency and more nearly allocate the factors of production according to the relative advantages of the several transportation modes.

Proponents of marginal cost pricing are on fairly firm theoretical ground. Critics, therefore, rather than attacking the theory *per se*, direct attention to the inherent complexities of administering marginal cost pricing. The subsidy essential because such price would fall below average cost is obviously vulnerable because of the stigma associated with "placing the industry on the dole" and the general reaction against bureaucracy. It is this point on which the critical assault centers, but there are in addition the very real practical and conceptual difficulties associated with investment decisions, e.g., predicting the planning and long-run demand curves without the sobering and compelling pressures peculiar to the price system when the profit motive is operative.⁶ Other objections to marginal cost pricing stem from factor indivisibilities, differing concepts of social justice and the inevitable dispute revolving around interpersonal comparisons of utility. The controversy is a long one and it is not our purpose here to review it in detail.⁷ But whatever one may think of the merits of marginal cost pricing, it is clear in view of tradition and present-day political thinking that marginal or

incremental cost pricing is not likely to gain any widespread popularity. The failure of the federal government to employ marginal cost pricing extensively in the marketing of public power attests to the improbability of wide-scale adoption of this type of pricing. Even when governmental organizations are excellently suited to experiment in this area, they are loath to do so.⁸ Despite political and economic objections, marginal cost pricing is yet, in light of Commission policy, a valuable concept for the appraisal of federal rate regulation.

The infeasibility of marginal cost pricing has led some writers to suggest that the theoretical ideal can be approximated through careful application of the power to discriminate. Pigou speaks of first degree discriminations⁹ while more recent writers prefer the somewhat paradoxical term of perfect discrimination¹⁰ to describe discriminatory pricing policies which could lead to ideal output. As these writers see it, demand schedules are divided into separate and isolated components. For each component or unit of service a charge would be levied equal to the maximum price consumers would be willing to pay.¹¹

Under such a system an individual might be charged x for the first unit of service; x minus one for the second; x minus two for the third, etc. Under no circumstances, however, would charges fall below marginal costs which, in this example, might be x minus ten.

⁶ For a good discussion of this point, see E. Troxel, "Incremental Cost Control Under Public Ownership" *The Journal of Law & Public Utility Economics*, August 1943, p. 295.

⁷ A. C. Pigou, *Economics of Welfare*, 2nd edition (London: Macmillan and Co., 1924), pp. 248-253.

¹⁰ J. Robinson, *The Economics of Imperfect Competition* (London: Macmillan and Co., 1948) pp. 187-188; E. W. Clemens, "Price Discrimination in Decreasing Cost Industries," *American Economic Review*, December 1941, p. 794.

¹¹ "A first degree (discrimination) would involve the charge of a different price against all the different units of commodity, in such wise that the price exacted for each was equal to the demand price for it, and no consumers' surplus was left to the buyers." A. C. Pigou, *op. cit.*, p. 248.

⁶ For a good discussion of this point, see I. M. D. Little, *A Critique of Welfare Economics* (Oxford: Clarendon Press, 1950) Chapter XI.

⁷ For a recent article on this subject, see R. W. Harbeson, "A Critique of Marginal Cost Pricing," *Land Economics*, February 1955, p. 54.

Perfect discrimination is presumed to increase welfare through the fuller use of specialized resources because consumers who are willing to pay a price equal to or greater than marginal cost, but less than average cost, are served. Moreover, because sales at less than average cost are offset by sales above average cost, perfect discrimination permits the attainment of the theoretical ideal without need for subsidy and therefore does not suffer some of the vigorous criticisms attending incremental cost pricing. Unfortunately, application of the perfect-discrimination principle is unlikely to effect an increase in welfare except under conditions of "pure monopoly." Railroads are not, of course, "pure monopolies," and because of the high elasticity of substitution among the services offered by many lines, discriminatory pricing may be inimical to welfare. Figure I may be used to illustrate the point. Assume

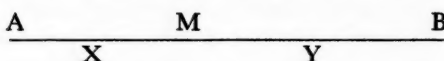


FIGURE 1. A HYPOTHETICAL EXAMPLE OF MARKET COMPETITION

railroad X currently supplies M with coal mined at A. Assume further that railroad Y wishes to transport coal from B to M. Y's demand curve is a function of the rates levied by X; and, assuming identical cost schedules for both roads and equal mining costs at A and B, X could monopolize the market by establishing rates below the incremental cost of transporting coal from B to M. But experience indicates that it is more likely for X to realize a larger contribution to overhead costs if it charges a higher rate and allows Y a share of the market. The transportation of coal by Y, of course, engenders economic waste to the extent that the marginal cost of transporting coal from B to M exceeds that of transporting coal from A to M. Such wastes

are common to the railroad industry and can be explained in terms of the desire of each railroad to establish rates which maximize the contribution to overhead costs. Discriminatory pricing under conditions of oligopoly cannot be expected to effectively allocate traffic to the low-cost carrier because the rates stand at different levels above the marginal costs of the respective roads serving a market. It thus appears that discriminatory pricing, when practiced by the industry as a whole, must lead to a substantial amount of wasteful transportation. Only in those instances where a road enjoys a "pure monopoly" is discrimination likely to be useful as a means of attaining the theoretically ideal output. Such instances are indeed the exception. Yet, as will be shown later, discriminatory pricing, properly employed by the low-cost road, may be a valuable instrument in producing favorable resource allocation.

Discussion to this point indicates that marginal cost pricing is impossible without governmental assistance. Yet rates unrelated to marginal costs encourage wasteful transportation. If the industry is to operate without subsidy and yet minimize waste, rates must be related to marginal costs. Theoretically this can be achieved by making the railroads levy charges which are multiples of incremental costs. Under such a pricing policy the key road (the road able to supply the market at the lowest incremental cost) would effectuate the rates which would produce a maximum contribution to overhead. For other roads wishing to serve the market, the key road's ratio of rates to incremental costs would be the standard upon which the rate structure would be constructed. Again, Figure 1 may be used to demonstrate our point. Assume as before that the incremental cost of transporting coal

to M is a minimum when road X is employed. Assume further that X finds a rate of twice the incremental cost of transporting coal from A to M to be the most profitable. Under such conditions, Y, or any other line wishing to serve M, would be compelled to establish rates equal at least to twice the incremental cost it experiences in moving coal to M. Relating rates to incremental costs in this fashion will discourage common wastes arising from cross hauling, circuitous routing, and social losses which accompany the uneconomic location of industry; and at the same time nothing will prevent the key road from practicing price discrimination as a means of encouraging a fuller use of rail facilities. It is not, of course, claimed that multiple incremental cost pricing will produce the ideal theoretically possible under marginal cost pricing.

Two objections to the multiple incremental cost-pricing principle are immediately apparent. First, the principle could not be administered with precision; and second, because marginal costs and prices are sometimes poor reflectors of marginal social costs and marginal social benefits respectively, rigorous application of multiple incremental cost pricing would cause some services and even some rail lines which are essential to the public good to be abandoned. This second objection has merit and would require the application of multiple incremental cost pricing to be tempered with a degree of Commission discretion. Criticism arising from administrative complexities is also well founded. It is certainly true that insurmountable difficulties would arise were the Commission so naive as to attempt to rigidly enforce multiple incremental cost pricing. On the other hand, to discard this approach because of administrative impracticability tacitly assumes that rate regulation can attain a

high degree of exactness. Such an assumption is highly unwarranted. Finally, if multiple incremental cost pricing is to be discarded on the basis of either objection, a search for substitute economic criteria is necessary. But what would these criteria be? Average costs, marginal costs, and discriminatory pricing have proved to be inadequate. Hence, it appears that unless the Commission is to ignore crucial economic factors, multiple incremental cost pricing is the only standard available. With this discussion of criteria in mind, let us now examine Commission practice.

Administration of the "Effect of Rates on the Movement of Traffic Clause"

Although Congress did not require the Commission to consider the effect of rates on the movement of traffic until 1933, in a number of early revenue cases the Commission ruled that realistic interpretation and administration of the Interstate Commerce Act necessitated traffic volume to be a vital test of rate reasonableness.¹² In 1921 the atmosphere of a declining price level and a general deterioration of business conditions caused the Commission to consider the need for an across-the-board reduction in railroad rates. Promoted by the shipper's vigorous contention that unreasonable railroad charges retarded economic recovery, the Commission instituted a proceeding which culminated in a general reduction of rates. The decision in this case¹³ must remove any doubt as to the Commission's power to consider the elasticity of the demand for rail service as an important factor in the appraisal of the reasonableness of rates. Confronted with the argument that the Commission must be guided "solely by those things which are definite and certain in the past," the

¹² *Rates on Grain, Grain Products and Hay*, 64 ICC 85 (1921); *Reduced Rates 1922*, 68 ICC 676 (1922).

¹³ *Reduced Rates 1922*, 68 ICC 676 (1922).

commission gave its oft-repeated declaration: "Our function under the law is not that of mere computers and cannot thus be atrophied."¹⁴ The duty to prescribe rates, in the eyes of the Commission, requires an informed judgment upon all the facts, present and past, in order to forecast the future as best it may.¹⁵ Accepting the argument of the shipper that high rates are no guarantee of maximum revenue, the Commission found railroad rates to be inordinately high and ruled they "must come down." Professor Sharfman in his outstanding work, *The Interstate Commerce Commission*,¹⁶ fully approved of the Commission's action and expressed the view that the molding of the rule of rate-making into a flexible instrument of policy constituted "the high-water mark of the Commission's performance in the regulation of rate levels."¹⁷ Professor Sharfman further commended the Commission for the development of an affirmative responsibility which demonstrates equal concern for the welfare of the carriers and the need of the public for reasonable rates.¹⁸

Decisions rendered in subsequent revenue cases further extended the basic policy enunciated in *Reduced Rates, 1922*. With the depression of the thirties came diminished railroad revenue, a rise of railroad bankruptcies, and a series of revenue cases.¹⁹ Although the decisions in these cases were directly or indirectly related to the welfare of the carriers, it was ruled that rates could not be unconscionably high.²⁰ The Commission

declared unreasonable and impractical any policy which would attempt to assure the lines a stable rate of return notwithstanding the general health of business and ruled that Congress did not intend to make carrier revenue needs the "paramount and controlling factor" in the determination of a reasonable general level of rates.²¹ In conjunction with this statement it is important to know that the concept of reasonableness as employed in "revenue cases," i.e., general rate cases, frequently has different meaning than the concept of reasonableness applied in "rate cases." It is true, of course, that the traditional legal standard of rate relationships and the economic criterion of value of service are important factors in revenue cases; but in addition to these, the Commission appears to apply a subjective measure which bears a marked resemblance to Aristotle's "just price." The Commission spoke of the incongruity of increasing freight rates at a time when commodity prices are falling and emphasized the fact that the courts have long sanctioned the principle that carrier charges must not exceed the reasonable worth of the service.²² Hence, at any given time the reasonableness of the general level of rates is judged not only by the standards commonly employed in "rate cases," but also by ethical standards which cause rates above a given level to be inherently unjust.

The Commission's wisdom, or lack of it, in administering the rule of rate-making will continue to be the subject of debate. Professor Sharfman concludes that the Commission, if it erred at all, erred in giving undue consideration to the financial status of the carriers.²³ Some other writers have expressed the opposite

¹⁴ *Ibid.*, p. 730.

¹⁵ *Ibid.*

¹⁶ Vol. III B (New York: The Commonwealth Fund, 1936).

¹⁷ *Ibid.*, p. 132.

¹⁸ *Ibid.*, pp. 133-134.

¹⁹ *Fifteen Percent Case, 1937*, 178 ICC 539 (1931), 179 ICC 215 (1931), 191 ICC 361 (1933); *General Rate Level Investigation, 1933*, 195 ICC 5 (1933); *Emergency Freight Charges, 1935*, 208 ICC 4 (1935), 215 ICC 439 (1936), 219 ICC 565 (1936); *General Commodity Rate Increases, 1937*, 223 ICC 657 (1937); *Fifteen Percent Case, 1937-1938*, 226 ICC 41 (1938).

²⁰ *Fifteen Percent Case, 1931*, 178 ICC 539, 565.

²¹ *Ibid.*, p. 564.

²² *Ibid.*

²³ Sharfman, *op. cit.*, p. 193.

view.²⁴ However one may feel on this subject, if Commission policy is to be justified in terms of carrier welfare, which is frequently the case, then Commission success or failure turns on the accuracy this agency has realized in predicting the intensity and elasticity of the demand for rail service. The Commission has commonly admitted to the temporary expediency of rate increases but has pointed out that higher charges ultimately may stimulate relocation of industry, changes in marketing patterns, and diversion of traffic to competing transportation modes. In short, the Commission has often feared that higher railroad rates would worsen rather than improve the financial lot of the carriers because the long-run demand for rail service is highly elastic.²⁵ It thus appears that Commission policy is as much a product of an attempt to inhibit rate changes inimical to the long-run position as it is a result of a need to satisfy immediate exigencies.

If the administration of the rule of rate-making has been correctly presented, it appears that at various times since 1920 the Commission has adopted a policy which, at least in some respects, resembles marginal cost pricing. Certainly the Commission has on occasion held rates below short-run maximum profit levels as a means of encouraging the use of specialized resources. Moreover, in viewing the long run, rates were held down in an effort to restrain the diversion of traffic to the so-called cheaper mode of transportation. The phrase, cheaper transportation mode, apparently refers to the motor carriers in in-

stances where the marginal costs of the highway carriers exceed those of the rails but lie somewhere between the marginal and average cost of the rail lines. To attribute any other connotation to this phrase would imply that the Commission deliberately encourages the use of the least efficient transportation agency. Such an implication is unwarranted.

The advantages of Commission policy are clear. Retarding railroad rate advances stimulates the use of specialized resources in the short run and tends in the long run to bind to the railways that traffic for which they have a cost advantage. By so doing, Commission policy deters wasteful and uneconomic expansion of non-rail facilities and makes the entire transportation industry less susceptible to the perennial peace-time problem of excess capacity. Yet Commission policy is not without its weak points and these must now be considered. Predicting the effects a general rate increase will have on revenues and earnings may very well transcend the capacity of any group of mortals. Where the Commission substitutes its own judgment for that of the carriers, such action is largely justified in terms of furthering the earnings and welfare of the carriers. But the quantity of rail rates, as well as the difficulty associated with finding the most profitable level for individual charges, casts some suspicion on the competency of the Commission to effectuate maximum income bearing rates. Rate-makers are confronted with literally hundreds of thousands of demand curves, each of which differs from the others in magnitude and elasticity. Thus, a uniform percentage increase of all rates cannot be expected to produce maximum possible income. On a given commodity the optimum rate increase between two points may be 30 percent; between another two points, 5 percent; and between

²⁴ C. S. Dearing and W. Owen, *op. cit.*, Ch. XIII; S. L. Miller and V. D. Cover, *Rates of Return Class I Line-Haul Railways of the United States, 1921-1948* (Pittsburgh: University of Pittsburgh Press, 1950).

²⁵ The Commission expressed the view that railroad relief lay not in the advancement of rate, but rather in reduced costs to be realized through greater efficiency and the realignment of the industry made possible by consolidations. *Fifteen Percent Case*, 1931, 178 ICC 539, pp. 585-586; *Emergency Freight Charges*, 1935, 208 ICC 5, pp. 61-63.

still a third set of points the maximum income-producing rate may lie somewhere below the established level. The elusive nature of "perfect rates" makes their realization difficult when management is free to experiment and an impossibility when the Commission invokes rate ceilings. Hence, if the Commission's authority is justified solely on the basis of the financial health of the lines, which of course it is not, one might strongly advocate the abolition of this power on the grounds that it cannot ameliorate and probably will damage the carriers' financial status. In the last analysis, Commission control over the general level of rates must be predicated on the assumption that carrier management, failing to understand the price-quantity relationship, will, as a means of improving earnings, resort to rate increases even in the face of a highly elastic demand for rail service. It is submitted that such an assumption is contrary to fact. Price elasticity historically has been an important factor in the construction of rate structures, just as in more recent years it has given impetus to the reduction of rail charges on traffic which can advantageously be carried by competing transportation agencies.

It must be admitted that restraints prohibiting the full exploitation of the inelastic demand for rail service make it more difficult to obtain the revenue necessary to cover all economic costs and, therefore, are injurious to the credit rating of the industry in the securities market. The resulting rise in capital costs tends to raise the entire industry's cost structure and in the long run act as a force in diverting traffic to other transportation modes. In conjunction with reduced investors' confidence in rail securities, low earnings are likely to have a significant impact on the industry's ability to experiment with and adopt

technological developments. The heavy reliance of almost all business organizations on internal financing as a means of improving and expanding capital facilities creates a continuous need for the accumulation of large amounts of funds. If regulation holds the marginal efficiency of railway capital to a submarginal level, it must be assigned the responsibility of impeding rail technological progress and imposing obstacles to the attainment of lower railroad costs and/or better railway service. In short, restrained earnings through regulation may indirectly encourage the diversion of traffic away from the rail carriers. The post World War II revenue cases shed additional light on this subject.

Revenue Cases in the Postwar Period

The Commission declared an awareness to the dangers of a weak credit position and suggested that subnormal depression earnings be complemented with abnormal profits in more prosperous periods.²⁶ That the Commission adhered to this principle in later years is doubtful. During World War II, in addition to making price a more effective device for rationing the short supply of rail facilities, higher rates would have enhanced railroad earnings.²⁷ The Commission, however, spurned increased rates on the grounds that they would seriously weaken the government's anti-inflation program.²⁸ Subsequent to World War II a series of revenue cases

²⁶ *Fifteen Percent Case, 1931*, 178 ICC 539, 582; *General Commodity Rate Increases, 1937*, 223 ICC 657, 730.

²⁷ As a deterrent to unnecessary passenger travel during the war, the Commission did approve increased passenger fares. *Railway Rates, Fares, and Charges, 1942*, 248 ICC 545 (1942).

²⁸ Evenly divided on the desirability of maintaining throughout the war previously approved rate increases, Commissioner Eastman was called from his duties as Director of the Office of Defense Transportation to break the deadlock. His concurring opinion in *Railway Rates, Fares, and Charges, 1942* clearly expresses the belief that rate policies must be subservient to government's program for controlling inflation.

arose, the last of which was decided in 1953.²⁹ With one exception³⁰ the Commission refused to accede to the full demands of the roads. Yet only in one case, and then only in passing, did the Commission express the belief that increased rates might be detrimental to the financial position of the roads.³¹ One must, therefore, conclude that the Commission refused to fully approve management's demands on the grounds that the proposed increases would have led to excessive railroad earnings. Statistics, however, do not show earnings to be unreasonably high. From 1946-1953, the period during which the postwar revenue cases were under consideration, a return on railway investments of approximately 3.8 percent was reported.³² From 1931, the year the compensatory earnings principle was enunciated, to 1953, the lines earned a rate of 3.4 percent. The adequacy of such a return is the subject of heated debate.³³ It seems safe, however, to point out that just as the Commission is in some measure responsible for what appears, at least at first glance, to be a niggardly return on railway investments, so also it is responsible for retarding the marginal efficiency of railroad capital. And by hindering the roads' ability to improve and expand capital facilities, it has also posed barriers to better service and reduced costs. The precise effect low returns have had on the industry and whether increased earnings should have

been permitted in view of the many imponderables are, of course, sources of disagreement.

In concluding this section of the paper it may be well to emphasize that both beneficial and detrimental results flow from Commission rate policy. Decisions resting on the concept of "just price" and a crude estimate of price elasticity temporarily, at least, tend to halt the diversion of traffic to non-rail transport agencies. Binding traffic to the rails through rate regulation has the salutary, if perhaps ephemeral, effect of retarding uneconomic expansion of competing transportation modes. Society's savings from such a policy, though not subject to calculation, may be substantial. Against these savings must be balanced the fact that regulation, by restraining earnings to below attainable levels, has to some extent impaired the railways' credit and capacity for exploiting technological advances, and may be an important factor in the gradual erosion of the railroad position.

Limits Imposed in General Rate Proceedings

At this point one might logically assume that the general rate increases considered and approved by the Commission are applicable to all traffic. This, of course, is not the case. It is the practice of the Commission to except large numbers of commodities from the generally authorized increases by imposing either dollar and cents limits and/or by establishing maximum allowable percentage increases. *Increased Freight Rates, 1951*, for example, excepted 25 commodity groups from the full 15 percent authorized in the proceeding. The *Precise factors* causing the Commission to hold down increases on certain traffic are not always clear. To be sure, the evidence submitted in rate proceedings is briefly reviewed in the printed opinions, but in

²⁹ *Increased Railway Rates, Fares & Charges, 1946*, 264 ICC 695 (1946), 266 ICC 537 (1946); *Increased Freight Rates, 1947*, 269 ICC 33 (1947), 270 ICC 93 (1948); *Increased Freight Rates, 1948*, 272 ICC 695 (1948), 276 ICC 9 (1949); *Increased Freight Rates, 1951*, 280 ICC 179 (1951), 281 ICC 557 (1951); 284 ICC 589 (1952); 289 ICC 395 (1953).

³⁰ *Increased Freight Rates, 1951*, *op. cit.*

³¹ *Increased Freight Rates, 1948*, 276 ICC 9 (1949) pp. 17 & 47.

³² Computed from data found in D. P. Locklin, *Economics of Transportation*, 4th edition (Homewood: Richard D. Irwin, 1953) pp. 364-367 and *Statistics of Railways of Class I*.

³³ For writing criticizing the ICC for holding earnings to inadequate levels, see: C. S. Dearing, *op. cit.*, Ch. XIII; S. L. Miller and V. O. Cover, *op. cit.*

many instances the Commission's only comment on the subject is a finding that increases above a given level are unreasonable. There seems to be a plausible explanation for the Commission's use of "hold-downs." The possible detrimental effect increased rates may have on certain types of traffic movement may be one explanation. The distinct possibility that a horizontal percentage increase may distort rate structures and cause some shippers to be favored over others may be another reason for employing "hold-downs." But while some general rationale for employing "hold-downs" is easily explained, the results of such a practice are often not.

The Commission has consistently ruled that it is not an eleemosynary organization and should not be called upon to halt the decline of a particular industry. A careful reading of rate cases causes one to regard Commission statements on this subject with skepticism. Certainly restricting rate increases on coal, for example, on the ground that substitute fuels would in many instances replace coal if rates on the latter were increased, places the Commission in the position of assisting one industry at the expense of others. The Hoch-Smith Resolution³⁴ and the "effect of rates on the movement of traffic clause" may be cited as a means of justifying Commission practice helpful to declining industries. In view of Supreme Court pronouncements, however, neither of these pieces of legislation directs the Commission to retard one industry in order to protect another.³⁵

A study of the use of "hold downs" is also valuable because it clearly shows the weakness of the contention that the Commission is more competent than

management to appraise the profitability of rates. In *Increased Freight Rates, 1951*, for example, a 12 percent rather than the proposed 15 percent was allowed on grain, grain products, and articles taking the same rate as grain. To say that a uniform rate increase of either 12 percent or 15 percent on these commodities will produce the maximum possible net income approaches the ridiculous. If enhancing railroad net revenue is the objective, then maximum rate regulation should be inoperative except as a means of curbing undue discrimination. The ideal profit-producing arrangement is attained when the roads are given unlimited freedom to exploit the price elasticity of the demand for rail transportation. If, on the other hand, the application of maximum rate regulation to revenue cases is not a device for raising railway net revenue, then let it be admitted that decisions often are controlled by factors other than the welfare of the roads. It is submitted that the Commission dons the cloak of carrier welfare to justify, among other things, findings designed to maintain the status quo. One can hardly dispute the Commission's resort to "hold-downs" as a means of mitigating "disruptive economic forces" which might accompany across-the-board percentage increases. Of special concern to the Commission is the preservation of the relative ability of the various geographical areas to participate in the supplying of major markets. For this reason rates on citrus fruits are usually subject to "hold-downs." Approval of flat percentage increases would benefit southern growers and injure Pacific Coast growers. "Hold-downs" on edible nuts, coal, lumber, and sugar appear to be employed with the purpose of preserving the status quo within the various industries producing these commodities.

³⁴ This piece of legislation directs the Commission, in adjusting rates, to consider "the conditions which at any given time prevail in our several industries."

³⁵ See *Ann Arbor Railroad Co. v. United States*, 281 U.S. 658 (1930).

The extent to which cost is a factor affecting "hold-downs" is not always clear. But the study of revenue cases leads one to suspect that the need for placating regional interests is frequently accorded more weight than cost data. If this be true, Commission policy is subject to serious criticism. Earlier in this paper it was pointed out that railway pricing policies not relating rates to incremental costs were certain to encourage substantial amounts of wasteful transportation. It is, therefore, disconcerting to find evidence indicating that, instead of striving to develop and apply a policy theoretically consistent with multiple incremental cost pricing, the Commission has frequently ordered rate adjustments which are in direct conflict with almost any logical cost theory. In many instances where market competition is a factor, instead of engendering the construction of a rate structure which would ultimately minimize the cost of performing a given transportation task, the Commission has compelled rate adjustments which tend to increase rather than decrease the cost of performing the transportation function. Rate policy engendering such wasteful transportation is, of course, explainable in such a fashion that one is tempted to find sympathy with the

Commission's position. As it now stands, the flexibility permitted in building rate structures is consistent with the deeply rooted philosophy which makes welfare subordinate to the right of each carrier to compete in any "reasonable manner."²⁶ At the same time it appears that the Commission often follows the lines of least resistance and limits rate increases in recognition of the pleas of regional pressure groups which might suffer from rates tied more closely to costs.

Perhaps one cannot expect the Commission to employ sound economic criteria in appraising proposed rate modifications so long as rate structures continue to be incredibly complex. Although class rates have been simplified in the last few years, the consolidation of roads into a limited number of regional systems seems to be the only real means for advancing the rationalization of rate structures. Thus, it becomes apparent, as so often is the case when studying rail transport, that railroad consolidation provides the key to significant transport economies, to improved regulation by the Interstate Commerce Commission, and to further advances in welfare.

²⁶ For a discussion of this point see I. L. Sharfman, *op.cit.*, pp. 764-765.

Ownership and Use of Forest Land in Northwestern California

By ADON POLI*

A SINGLE fixed land-use policy is often not appropriate for a large area of forest land. This is true even though the forest cover, climate, and other basic physical factors of the area may have certain characteristics in common. Knowledge of factors other than cover, climate, and soil is needed for policy decisions. Ownership and use patterns of forest land must be understood and considered before effective policies for management of such land can be developed. These facts are brought out in a recent study of forest landownership in northwestern California.

Northwestern California

Some of the most productive timberland in the world is found in northwestern California. Here the world-famous redwood trees grow in their natural state. They grow in a long narrow strip of land along the northern California coast where frequent low, dense, nocturnal fogs in summer favor their growth. Redwood trees are unequaled for their great size, height, and age. A common size is about 6 feet in diameter, although some of the larger trees exceed 20 feet in diameter, 350 feet in height, and 2,000 years in age. An unusually favorable combination of species, soils, topography, and climate have resulted in heavier stands of timber in redwood forests than in forests anywhere else in the world. The majestic beauty of the virgin stands, the great size and

age of individual trees, the enormous timber volumes, and other unusual characteristics of the redwood all contribute to the wide demand for redwood timberland for lumber production and for recreation.

Douglas fir trees are found throughout the area. They grow in pure stands and mixed with redwood, pine, and other associated species. Because of the superior quality of lumber from redwood trees and other competitive timber species, for a long time little demand existed for the Douglas fir timber in this area. But the accelerated use of timber products during World War II and postwar years made Douglas fir—which actually exceeds redwood in land area and timber volume—an important source of commercial timber in the area.

Lumbering, livestock ranching, and recreation are leading industries in northwestern California. Cultivated agriculture, commercial fishing, manufacturing, and mining are important too, in certain localities. Lumbering became a major industry here in the 1850's. Almost a decade earlier—in 1842—the first power sawmill in California began operations in the redwood forests of Santa Cruz County. Today, after a little more than a century of lumbering history, the industry has developed from a few water-powered sawmills to about 500 modern sawmills of many types and sizes and capable of producing about 3 billion board feet of lumber annually.

About 650,000 people live in the forest area of northwestern California, but ownership and use patterns of the forest land are considerably influenced by the larger number of people who live in ad-

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jacent urban areas of the San Francisco Bay region. The total number of people within this sphere of influence is estimated at about 2.5 million. The city people use the wood products manufactured in the area and visit the forests for recreation. They also depend on the forests for part of their water supply.

The Forest Landownership Study

The study of forest landownership in northwestern California was established cooperatively by the Production Economics Research Branch, Agricultural Research Service (formerly part of the Bureau of Agricultural Economics) and the Forest Service of the United States Department of Agriculture. It was conducted as part of the regular nation-wide Forest Survey of the Forest Service which, in California, is a major activity of the Division of Forest Economics, California Forest and Range Experiment Station.

The ownership survey covered the forest, range, and farm-forest land of two major forest subregions, the Redwood-Douglas fir subregion on the coast and the Coast Range Pine subregion farther inland (figure 1).¹ Commercial forest land comprises 56 percent (7.5 million acres) of the 13.4 million acres of land in the study area. The rest consists of 4.1 million acres of noncommercial forest land and 1.8 million acres of nonforest land. Productive forest land (commercial forest land) grows principally redwood, Douglas fir, pine, and fir, in pure stands and in combinations. Noncommercial forest land is principally a mixed hardwood and grass type, and chaparral. Nonforest land is mainly

of two types: land that has never supported forest growth or land from which forests have been removed. Much of the latter has been developed for uses other than timber production, such as grazing, cultivated agriculture, and residential or industrial development.

Public records, especially those of assessors and tax collectors of individual counties provided data on size of land holdings and residence of owners. Mailed questionnaires and personal interviews furnished information as to how the owners used their land, how and why they acquired it, why they hold it, and their major occupations. The Forest Survey supplied the forestry data which was correlated with the ownership information. The line-sampling technique and other procedures developed for this study are described in detail in previous articles.²

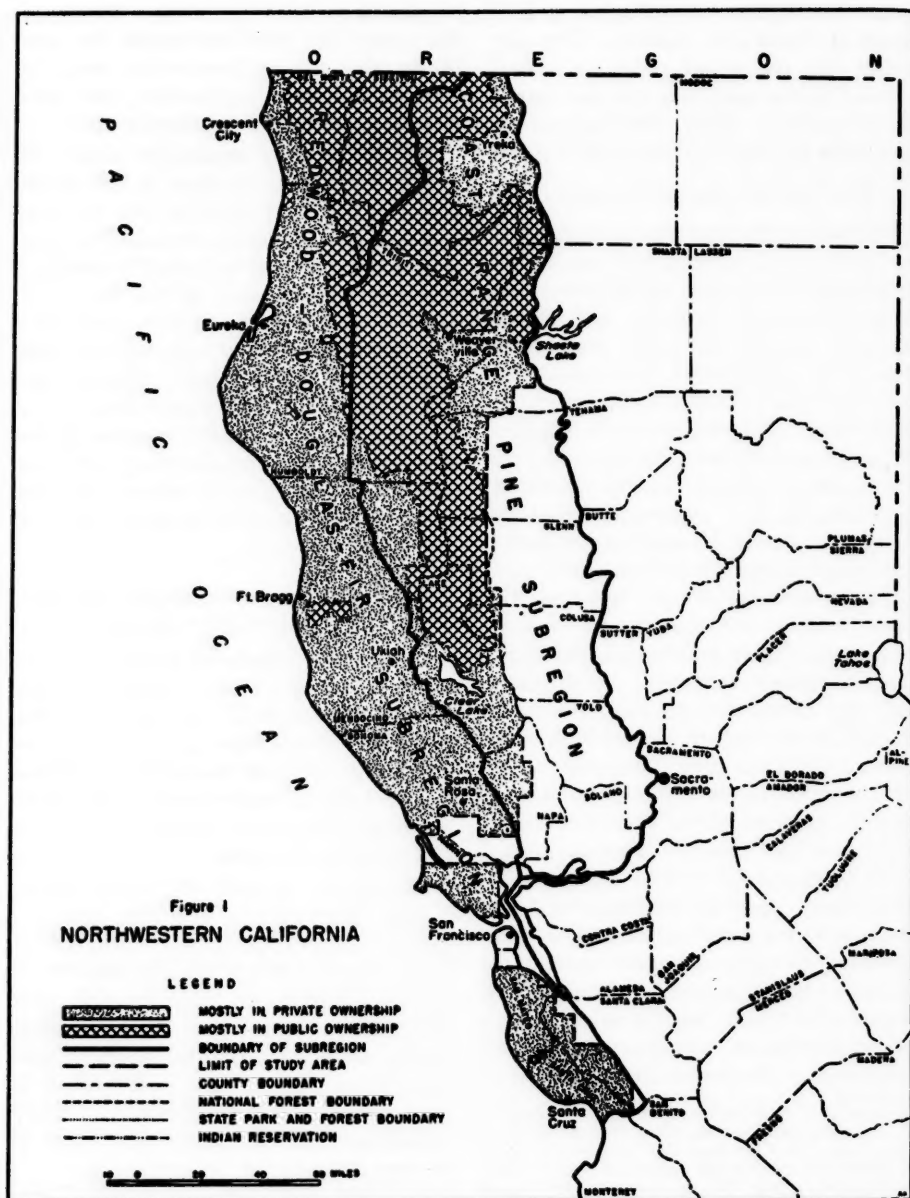
How the Original Landownership and Land Use Patterns Were Formed

Before the Spaniards came to California, Indians used the land in northwestern California for hunting and fishing and for growing the few native crops necessary for their sustenance. These people had few direct ties to the land. Private ownership of land by individuals was unknown to them.

During the Spanish era, which began in the latter part of the 18th century, private ownership usually consisted of large irregular tracts of land granted to Spanish settlers by the Spanish and Mexican governments. These Spanish grants were made in the southern and central parts of the area as far north as Mendocino and Lake Counties. They constituted one of the earliest forms of

¹ For detailed ownership reports for individual subregions see: Adon Poli and Harold L. Baker, *Ownership and Use of Forest Land in the Coast Range Pine Subregion of California* (California Forest and Range Experiment Station) Technical Paper No. 2, June 1953, pp. 1-64; and Adon Poli and Harold L. Baker, *Ownership and Use of Forest Land in the Redwood-Douglas fir Subregion of California* (California Forest and Range Experiment Station) Technical Paper No. 7, June 1954, pp. 1-76.

² A. A. Hasel and Adon Poli, "A New Approach to Forest Ownership Surveys," *Land Economics*, February 1949, pp. 1-10; and Adon Poli, "Conducting a Survey of Ownership of Forest Land in California," *Agricultural Economics Research*, January 1952, pp. 8-12.



private ownership here. Containing some of the choicest farm and rangeland, these grants were used principally for livestock ranching—the preferred agricultural industry of the Spanish owners. Some of the grants included considerable timberland. Most of the agricultural land in these Spanish grants was later subdivided and sold to new settlers. But some of the timberland remained in fairly large holdings even after the land grants were broken up. The irregular metes and bounds pattern of ownership formed by these Spanish “ranchos” is still a peculiarity of land records of several counties in this area.

When the United States acquired California from Mexico in 1848, all land in the state, except for certain private claims such as pre-existing Spanish land grants, became part of the federal public domain. This land then became subject to disposal under the federal land laws. From then on, persons obtained land in northwestern California primarily by filing entries with the Federal Land office as provided by the Preemption, Homestead, and Timber and Stone Acts.

These general land laws operated under the principle that forest land could best and most economically be developed under private individual ownership and in small units similar to those acquired for agriculture. But many of those who filed entries on timberland in this area sold it shortly after acquisition to lumber companies, promoters, and speculators who consolidated the small tracts into some of the large timber holdings found here today. This practice of circumventing the original land laws led to fraudulent transactions and some notorious speculation. But it helped to establish an ownership pattern more adaptable to forest land management than could have been established by strict adherence to the provisions of the land

laws. This is particularly true of the northern part of the area where much valuable timberland is now concentrated in some large rather well-blocked private holdings. These large holdings are used almost exclusively for commercial timber production. Some of them offer excellent opportunities for the practice of sustained-yield forest management, and several operators are developing plans for long-range operations.

Following the discovery of gold in the 1850's, gold mining became an important industry in the northeastern part of the area. Mining led to establishment of small irregular ownership tracts, some of which are now used as small farms, recreational holdings, and residences.

To encourage the development of railroads in the West, the federal government granted forest and other land to the railroad companies. These grants consisted of alternate sections interspersed with government and other private land. Although individual holdings were large, the alternate sections of land of which they were composed formed a checkerboard pattern of ownership which still remains in certain parts of the area, particularly in some of the national forests. Because of conflicting policies of the various owners involved and the scattered nature of the holdings, the ownership pattern formed by these railroad grants aggravate certain problems associated with management and use of this land. These holdings are now managed principally for multiple-purpose uses, primarily timber operations, grazing, and recreation.

Considerable land in this area was granted to the state by the federal government to encourage the development and maintenance of schools. Most of this land was sold to private owners by the state although a few scattered sections remain in state ownership. These rem-

nants usually consist of the less desirable land that could not be disposed of easily. At present it is not intentionally used for any specific purpose because many of the land tracts are in inaccessible canyon areas.

Ranchers and farmers originally obtained land largely by filing entries with the Federal Land Office. Most of this land has since been transferred to new owners, principally through sale, inheritance, and gift. Many ranch and farm holdings contained considerable acreages of timberland intermingled with range and other agricultural land. Most of this timberland is still in ranch and farm ownerships. Production of timber and timber products on these agricultural ownerships is generally of secondary importance to the main ranch and farm operations.

Considerable forest land in the northeastern part of the area not appropriated for private or special public use has been incorporated in national forests. A limited acreage has been set aside for Indian reservations and allotments, and some land remains as unappropriated and unreserved public domain.

In recent years, some redwood land has shifted from private to public ownership through gift and purchase. This land, mainly state parks acquired from time to time to preserve in their natural state the more spectacular and easily accessible stands of redwood timber, is used exclusively for recreational purposes. The state recently acquired the Jackson State Forest in Mendocino County. It is managed by the State Division of Forestry, primarily as a demonstrational and experimental forest.

The Present Situation

The land acquisitional activities described in the previous section established much of the present pattern of ownership in northwestern California, but changes

occur constantly. Current influences, particularly pressure of urban population on rural land for recreational and residential use, are modifying ownership and use of land in certain parts of the forest areas. As we examine today's pattern of ownership and use of land, we find three major zones, differing as to type and size of ownership and land use. These major zones are roughly delineated as follows: (1) The northern part of the Coast Range Pine Subregion from the northern shore of Clear Lake to the Oregon boundary, (2) the northern part of the Redwood-Douglas fir Subregion from the southern boundary of Mendocino County to the Oregon boundary, and (3) the southern part of both subregions from Mendocino County and Clear Lake southward to Monterey County.¹

Northern Coast Range Pine Subregion. In the northern part of the Coast Range Pine Subregion, considerable land has remained in public ownership, principally in national forests. Private commercial forest land is in relatively large timber holdings. As industrial activity has lagged behind that of the Redwood-Douglas fir and other forest subregions of the state, considerably more forest land is owned by timber holders than by timber operators. But there are indications that industrial activity will expand here in future years. One of these is the increasing demand for the Douglas fir timber in this area. Another is the expressed intention of many timber holders to start operations here in the future. This will shift forest land from timber-holding classes into timber-operating classes.

Considerable commercial forest land here is in ranch holdings intermingled

¹ Much of the information presented in this section is an interpretation of statistical and other data compiled and published for individual counties within these forest subregions.

with areas of grass and woodland grass. When this timber is cut, much of the land may be used for livestock grazing.

The general pattern of ownership in the area presents no serious problem except for the checkerboard pattern which originated from the railroad land grants previously mentioned. These private checkerboard holdings are intermingled mainly with national forest land. Conflicting policies of the different owners complicate the management of this intermingled forest land.

Northern Redwood-Douglas Fir Subregion. In the northern part of the Redwood-Douglas fir Subregion, less timberland has remained in public ownership than in other forest subregions of the state. Demand for redwood forests for timber and other uses was strong early in the state's history and most redwood timberland went into private ownership shortly after the federal government began to dispose of its public land. Private timberland ownerships, particularly the redwood timber holdings, are generally large and fairly well blocked. As commercial timber operations have been active here for many years, timber operators control a larger share of the commercial forest land than do holders of timberland for future use. Lumbering and ranching are major uses of land in this northern part of the subregion.

Ranchers and farmers control an unusually large share of commercial forest land—more acreage than timber operators own. Some timberland on ranch holdings no doubt will be converted to range as the timber is cut. But the recent movement by the people of Humboldt County to examine the economic consequences of timberland conversion may help to retain some of this land in timber production after the timber is cut.

The general pattern of ownership in this northern part of the Redwood-

Douglas fir subregion has remained fairly constant. Significant changes have been establishment of some state parks and a state forest, and some recreational development of small holdings along highways and main county roads. Some timberland has been consolidated with larger holdings. But pressure from an increasing urban population is gradually encroaching northward into Mendocino County where some change in the land-ownership and land-use patterns can be expected in the future. This change will shift use of rural land from timber production and agriculture to recreation and residence. The number of small holdings of rural land is likely to increase.

Southern Coast Range Pine and Redwood-Douglas Fir Subregions. In the southern part of the study area, from about Mendocino County and Clear Lake southward to Monterey County, most of the forest land is in private ownership, and much of it is in numerous small holdings. Recreation, residence, and farming are major uses of land. Timber operations are generally conducted as secondary enterprises.

Small recreational and residential holdings are particularly numerous in counties near the San Francisco Bay region, where a heavy concentration of population presses upon nearby land resources. Public land for recreational use is more limited here than elsewhere in the State. As a result, private timber and agricultural land is constantly shifted from commercial production to other uses. In some counties commercial recreation has developed into a major industry. Elaborate resorts, dude ranches, motor courts, and other commercial establishments cater to weekend guests, vacationists, sportsmen, and out-of-state tourists.

Recreational and residential use of rural land is largely responsible for the

unusually large number of small holdings of timberland in this southern area. But the original federal laws favoring acquisition of land in small tracts by many different persons may also have helped to establish the original pattern of small ownerships here.

It is difficult to arrive at definite conclusions as to the desirability or undesirability of an ownership pattern that features preponderantly small holdings such as exists here. From a timber management standpoint, many foresters contend that a complicated pattern of small tracts owned by many different kinds of people does not favor good forest management.⁴ This applies to forest land for which commercial timber production is presumably the best economic use.

But if recreation has been established as the major use of a forest land area, as in the counties near San Francisco Bay, an ownership pattern of small holdings appears to be appropriate. When recreational areas are well planned, small holdings of forest land are no problem. Their main objective is not to produce timber but to protect the aesthetic values of the forest. Furthermore, the forest land in this area is unusually attractive and suitable for recreational use.

Summary and Conclusions

How can the information presented here help to improve conditions in this and other forest areas? Land-use policies in this state should be improved by a knowledge of the kind of people who own forest land, the size and pattern of ownership units, the way in which the

land is used, and some of the basic factors that were instrumental in establishing present ownership and use patterns.

For instance, knowledge of the fact that much commercial forest land of the northern Coast Range Pine Subregion is in national forests and a relatively few rather large private holdings should indicate that landownership alone is not a serious obstacle in obtaining good management of such forest land for timber production. Attention in this case should be focused on integrating national forest resources with those of private industry in such a way that maximum use of both types of resources can be attained and continued. Some attention should be directed toward improving the use of commercial forest land in ranch holdings and toward eliminating some of the checkerboard pattern created by railroad land grants.

In the northern Redwood-Douglas fir zone the local timber industry must rely heavily on privately-owned forests for raw material. Much productive timberland is in large, well-blocked ownerships generally adaptable to long-range management. A great deal of timberland is in ranch and farm ownerships which, under good management, could contribute much raw material to the timber industry. Attention, then, should be centered on measures which encourage maximum timber production on private forest landownerships, and which integrate ranching with forestry enterprises in such a way that maximum returns are enjoyed by both owners and operators of forest land. A good example of this kind of action is the current effort by the people of Humboldt County to formulate a long-range forestry program for different kinds of forest land holdings.

In the southern part of the area most of the land is privately-owned, and although the area contains considerable

⁴ *The Forest Situation in California*. Report to the Legislature by the California Forestry Study Committee, created by Senate Resolution No. 151, Statutes of 1945. Vol. II, p. 17, 1947; A. D. Folweiler and H. J. Vaux, "Private Forest Land Ownership and Management in the Loblolly-Shortleaf Type of Louisiana," *Journal of Forestry*, November 1944; United States Department of Agriculture, Forest Service, *The Management Status of Forest Lands in the United States*, Report No. 3 from *A Reappraisal of the Forest Situation*, pp. 6, 7. 1946.

commercial forest land, the pattern of ownership is complex. The many small holdings here are used principally for recreation, farming, and residence. Recreation and residence are firmly established uses of much of the land and the trend is toward an increase in these uses. We should recognize, then, that commercial timber production here is and will remain a minor use of forest land, and that timber operations are possible only when they do not interfere with other major uses. Attention should

be directed toward measures that will improve the pattern of ownership in areas which are suitable for commercial timber production but not so suitable for other uses.

It is obvious that those who deal with land policies in northwestern California cannot successfully apply a single and fixed policy to the entire area. Successful administration will require moderately different land policies in each of the two northern zones, and a third radically different policy in the southern zone.

Contrasts in Site-Selection: Factors Which Influence the Location of a Wood-Metal Pattern Shop and a Narrow Fabric Mill

By MELVIN L. GREENHUT*

Introduction

PERHAPS the most important contribution that recent empirical studies have made to the theory of plant location has been the uncovering of certain factors of location which for many years were not analytic parts of this field of speculation. This paper attempts to show these forces by examining the determinants which governed the location of a wood-metal pattern shop and those which controlled the site selection of a narrow fabric mill. These cases present certain sharp contrasts between themselves, but together they serve to emphasize the multiple forms in which location factors appear.¹ Our analysis

* Rollins College, Winter Park, Florida. The author wishes to express his appreciation to the Board of Editors of the University of North Carolina Press for permitting him to draw freely for this article from certain materials contained in his book, *Plant Location In Theory and In Practice* (Chapel Hill, North Carolina: University of North Carolina Press, 1956).

¹ At one time, largely in the tradition of Weber, the theory of plant location dwelt entirely on the cost at alternative sites. Studies such as S. R. Dennison's, *The Location of Industry and the Depressed Areas* (London, England: Oxford University Press, 1939) and D. C. Hague and P. K. Newman's *Costs In Alternative Locations: The Clothing Industry* (London, England: Cambridge University Press, 1952) centered on this one factor of location. Theoretical additions served to uncover many additional factors of location. (See, for example, M. Greenhut, "Integrating the Leading Theories of Plant Location," *Southern Economic Journal*, April 1952, pp. 526-538.) Such case studies as McLaughlin and Robock, *Why Industry Moves South*, National Planning Association (Kingsport, Tennessee: Kingsport Press, 1949), Stein and Hunstein, "Plant Location Factors and the Community," *Monthly Review*, Federal Reserve Bank of St. Louis, XXX, No. 11 (November 1948), Katona and Morgan, "The Quantitative Study of Factors Determining Business Decisions," *Quarterly Journal of Economics*, February 1952, 67-90, and Margolin and McLandon, *Transportation Factors in the Marketing of Newsprint*, United States Department of Commerce (Washington, D. C.: United States Government Printing Office, 1952), have been ever widening of the scope of inquiry. As we shall see in this paper, one therefore speaks today of many different general kinds of location factors, exact number depending upon the variety of inclusions which are under the factor definition.

in section II of the wood and metal pattern shop and then in section III of the narrow fabric mill follows substantially identical order of factor examination to facilitate comparisons between the cases. They manifest the variety of location forces that are considered in the selection of a plant site.

The Wood-Metal Pattern Shop

The Transport Cost Factor of Location.

The pattern shop sells its products locally, regionally, and nationally. The principal market at present is in Tennessee, while the largest part of the remainder of the market is the Southeast (Alabama, Georgia, and Florida). The raw materials are procured from several places: white pine from California; mahogany from South America (imported through Mobile); and aluminum, brass, and cast iron from Birmingham.

The firm located in Birmingham does not require special transport facilities. Similarly, the low intrastate shipping rates which existed in Alabama at the time of this firm's location were held to be unimportant because the largest part of this company's activities were expected to be conducted on an interstate basis. The significant transport data for the firm cover the relative cost of shipping the raw material and the finished product or, in other words, the "weight times rate" on the raw material and finished product.

In production, a slight loss in weight occurs in converting the raw materials into final product. Of like import, the freight rates on the raw materials are

lower than those on the final product. The combination of weight times rate shows that the lower freight rate on the raw materials are not low enough to counterbalance the weight differential in favor of the finished product. As such, it is relatively cheaper to transport the finished product over longer distances than the raw materials. The transport data (weight times rate) thus indicate an orientation to materials. If the transport factor was the sole locating force, the spokesmen of the firm maintain that the chosen site would remain in Alabama (a materials center) and in approximately the same specific locality²

The fact that transport cost is minimized at the location of this firm is largely a fortuitous result. Total freight cost amounts to only about 3 to 5 percent of total costs; furthermore, it is claimed that the variability of this cost at alternative sites is less than the variability of other costs and of demand. This firm's location at the least-cost transport point is therefore largely coincidental. Actually, other factors, as we will see, were more important than transportation in determining the plant location.

Other Cost Factors of Location. Officials of this firm believe that their wage payments are high; in fact, they contend that a 15 percent wage differential exists within a 75-mile radius of their site.³ Because payments to labor approximate 60 percent of total cost, this factor receives special consideration in location decisions.

The relative importance of labor costs to transportation costs follows naturally from the estimate of labor costs at approximately 60 percent of processing

costs while transportation costs are estimated at between only 3 percent to 5 percent of processing costs. Thus, assume labor costs averages \$300 per ton of product; at a 3 percent transport cost to processing cost (\$500) ratio, freight burdens would be \$15.00 per ton. If it is further hypothesized that each ton of raw material and product is shipped on the average a combined distance equal to 200 miles, then the cost of transport would be \$.075 ($\$15.00 \div 200$ miles) per ton-mile. A 15 percent labor differential (\$45.00) would therefore be equal to 600 ton miles. (If smaller distances from material source and to market were hypothesized in our illustration so that freight cost per ton-mile was greater than shown above, the labor differential would cause a smaller displacement.) It follows that some considerations other than the mere wage and transportation burden obviously caused the selection of the plant site; otherwise, the shop would not have located in Birmingham, but would have selected a site where it could gain the 15 percent wage differential.

The officials of the firm maintain that the labor supply at their site, though somewhat limited, is only slightly inadequate. On the other hand, the low turnover is regarded as highly satisfactory and advantageous. The firm operates as an *open shop*, and the owners prefer to continue this type of labor relations. The Alabama labor laws are said to have been without influence in the location decision.

The owners feel that the high productivity of their workers is a sufficient offset to the wage disadvantage they suffer in regard to southern rivals. Thus, they actually justify their location in terms of labor and southern competitors, while similarly believing they are not at any disadvantage with respect to northern rivals. It is this high labor productivity which goes a long way in offsetting the

² Indeed, Birmingham is also a market center, though in terms of the expected (and actual) sales markets, the location on the basis of minimizing freight costs would have been to the northeast of the selected location by about 25 miles.

³ This investigation was conducted prior to the time the 75-cent-an-hour minimum wage law went into effect.

displacement from the least-cost transportation point that the wage differentials might otherwise have caused. In effect, we find that the spokesmen regarded labor costs at their site as roughly the same as other places if not, in fact, on the favorable side.

This company declined offer of a rent-free building in the community in favor of one more conveniently located. This refusal was believed to be wise because of the accessibility of the selected plant site to employees and visiting customers. The spokesmen of the firm maintain that a sound location is realized only when this type of plant is readily accessible to all concerned with its operation, especially when it is located in a large city.⁴ They assert that their present location not only satisfies the customers but that it also helps yield their low-labor-turnover rate.⁵

This firm owns its land subject to a mortgage. Company officials maintain that the cost of their land is moderate, even as compared to smaller adjacent communities. Further, they believe that capital is as readily available here as elsewhere, and that its cost is on a par with the charges of banks in other localities. Similar views were expressed regarding taxes.

The finished product of the firm must be painted. Because of excessive smoke in Birmingham, some repainting is often necessary. A smaller community or a suburban location would be favored for

this reason. However, in comparison with other forces, this factor not only failed to motivate the locational choice but it was intentionally disregarded in the actual site-selection.

In summary of the cost factors of location, the transport needs of the firm are met at this location, labor cost is satisfactory, and capital, tax and land-building factors—although not vital—are not unfavorable. In making the locational decision the transport and labor data were of some importance but, as we shall find later on, another kind of factor governed the location of this firm.

The Demand Factors of Location. Perhaps the most difficult part of any location study is determination of the extent to which the demand factors of location governed the selection of a plant site. In the restricted sense of the location demand factor,⁶ in which it refers exclusively to forces that all firms experience (i.e., a demand curve of any shape), this determinant finds expression in the type of plant-site interdependence that exists between firms. Depending to a large extent upon the type of curve, firms selling over a market area may locate at a distance from each other in attempt to monopolize selected segments of the market; or else they may tend to agglomerate, thereby sharing the same overall market.

The simplest forms in which the demand factor of location may be found in practice arise in cases where sales are made to a single buying center and in situations where when sales are made over an area, a basing point, equalizing zone delivered, or comparable discriminatory price system is being used.

⁴ See E. H. Chamberlin, "The Product as an Economic Variable," *Quarterly Journal of Economics*, February 1953, pp. 1-29, especially 17-20 where the demand factor of location is mentioned in two ways: one, the restricted sense of this paper and two from the marketing-product sense which this paper examines under the discussions of revenue-increasing forces.

⁴ See Enke, *Intermediate Economics* (New York: Prentice Hall, 1950), pp. 432-436, where the ideas are expressed that agricultural rent measures proximity to market and savings in transportation, while urban rent is paid not to save transportation cost but in order to secure more sales at a higher price. Certainly, the spokesmen for this firm adhere to this view of urban rent, adding, if anything, the thought that accessibility of the plant site is important not only from the standpoint of sales but from the regard of employees.

⁵ It is the writer's opinion that this company completely succeeded in this objective. The plant is located about 5 minutes from downtown Birmingham. It is situated on a broad thoroughfare (east-west) of moderate traffic, which is connected with all the main arteries running north and south.

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In the initial event, the demand factor is not of any locational consequence at all. Plant-site interdependence between firms is actually ignored. In the latter markets, the demand curve relevant for any seller is largely independent of location. In actual effect, when industrial conditions (numbers, cost functions, product type, customs) elicit discriminatory price systems, cost and contact factors rather than demand govern the selection of the plant site.⁷ But, in the opposite case (the non-discriminatory f.o.b. mill price system), the demand curve is enlarged or reduced at different seller's location, depending significantly on the location of rivals.⁸ Under this price practise, it is often the fact that the demand factor can be governing while other forces are essentially secondary. Shifts in location of dispersal kind may increase significantly the market demand controlled by a firm.

In the case of the wood and metal pattern shop, sales are made over a market area and not to a single buying point. Moreover, the industrial price practice is nondiscriminatory f.o.b. mill. Without going into what would be irrelevant technicalities for the subject case, these conditions combined with certain basic demand data would suggest that the firms in this industry should disperse, *ceteris paribus*. But all other things are not equal, because firms in this industry tend to concentrate in the larger industrial centers notwithstanding the a priori expectations set up by the demand factor. Some force other than demand therefore governed this firm's location. We will note this governing

determinant in the next discussions which explain its locational character and why it controlled the selection of the plant-site by the subject firm. In final words on the importance of the demand factor, we can say that belief of adequate overall demand in the east south central-south-eastern region encouraged location in this area.⁹ But other than for this general area influence, its locational significance was effectively blocked out by the factor now to be examined.

The Cost-Reducing and Revenue-Increasing Factors of Location. Plant officials maintain that their firm is one of the larger manufacturers of wood and metal patterns south of the Ohio river. Castings produced by this company are used in the manufacture of automobiles, soilpipe and fittings, and other machines and equipment. The product is hand-made to order, a fact which necessitates close contact with the consumer.

The market types in which contact per se appears as a locational determinant give recognition to what we may refer to as the cost-reducing (cost) factor, revenue-increasing (demand) factor. More generally, this composite factor covers certain special advantages that arise from industrial agglomeration or deglomeration (for example, marketing economies, quick repair or replacement of machinery, and the modern style building made possible by selection of large land tracts that are available at sites removed from urban production centers). It is distinguishable from the cost and demand factors mentioned earlier because the prices of things are not of central importance here; rather

⁷ For one of the better review type of articles on the demand factor, see A. Smithies, "Optimum Location in Spatial Competition," *Journal of Political Economy*, June 1941, pp. 423-439.

⁸ For an extensive examination of location practices under discriminatory pricing in space, as well as nondiscriminatory f.o.b. pricing, see Greenhut, *Plant Location*, op. cit., Chapter II; also see Chapter I, for location effects of selling to a single buying center.

⁹ Of course the location of rivals influenced the site-selection. Relatively large numbers of firms in the north left a comparatively untapped southern region within which this firm could select its particular market area. The location of any rival has some effect in determining profitability of market areas. But note, the effect of this factor, as described here, is so indirect as not to comply with the requirement that must be fulfilled to demonstrate the effectiveness of the demand factor in a determining location role.

the availability and convenience of obtaining materials, finished products, and services become paramount. When certain location facilitates acquisition of inputs, the cost-reducing factor is influential; when it facilitates sales, the revenue-increasing factor is operative.

In production of wood and metal patterns, the engineering factor of fabrication under the watchful eye of the consumer is all-controlling. According to the spokesman of the subject firm, this revenue-increasing determinant governed the selection of their plant site. In establishing their plant in Birmingham, the officials of the firm are of the belief that they complied fully with this factor. Though the majority of sales are now being made to consumers in Tennessee, the spokesmen of the firm claim that the focal point of their market area continually shifts. These officials feel that the Birmingham location is superior to others in the South because it is situated at the contact center of the market area. The ease of travel to and from Birmingham should not change in the short-run, if ever at all. Inspection by and association with buyers during the stages of product development is thereby enhanced.

The Michigan and Ohio markets for this type of product are largely supplied by a firm located in Toledo¹⁰ and several scattered smaller companies. A movement by the subject company to the north of Birmingham would increase sales slightly in the northern areas while lessening contacts in the south. A location to the east, for example in Atlanta, would raise cost on raw materials, with no offsetting advantages in contacts. Indeed, according to these spokesmen, the relatively smaller number of customer foundries in Atlanta as compared with

those in Birmingham and vicinity would result in fewer sales. A location in smaller communities south of Birmingham might lower costs, but it would reduce the potential market.

Because time is claimed to be of the essence in sales of wood and metal patterns, and because close contact with the buyer is regarded as all important, this firm's location in Birmingham, in belief of full compliance with these elements, indicates that the revenue-increasing (demand) factor served as the governing locating force in this case.¹¹ In selecting its location, the subject firm gave primary consideration to its market area, not in the sense of costs as such or demand as such, but rather in compliance with the revenue-increasing (demand) factor.¹²

Before continuing further with special data that provide indication of the competitive position of the subject firm, it is well to summarize the analysis to this point as follows: The spokesmen for this firm believed that transfer relations would be favorable at the chosen location; furthermore, they expected that labor costs would be at least equal to like costs at southern or northern locations. Capital, tax, and land-building costs were regarded as relatively unimportant, though quite satisfactory at

¹⁰ The personal factor was absent or at best unimportant in this case, according to the spokesmen. Thus, though the three partners are local men, the site-selection in the same city was held to be chiefly coincidental for, if greener pastures were believed to exist elsewhere, they would have so located.

¹¹ Weber was not oblivious to this type of location; rather, he referred to it as an exceptional case. He claimed that if the auxiliary process is drawn to the location of the main process, as for example in the manufacture of machinery, then the special situation arises where the need for local contact between the auxiliary industry and the production of main process is governing. "All we can say here is that special location factors—and such special factors will often interfere with the rules of the theory—will draw the location of the auxiliary industry to the place of consumption, although according to the general rules, it should lie elsewhere The want for local contact is the reason why the machine industry, to stick to our example, orients itself toward the location of the main process of production." See Alfred Weber, *Theory of Location*, (Chicago, Illinois: Chicago University Press, 1928), pp. 207, 208.

¹² The Toledo firm is the fifth largest in the country, employing about sixty workers.

the chosen site. Neither transport nor labor costs were considered so favorable as to warrant the location. The existence of an adequate market area was, of course, vital. Company officials believed that the East South Central-Southeastern Market fell within this obvious requirement. But significantly, the demand factor did not find reflection in causing the firm to seek special results, such as spatial monopoly controls, even though discriminatory pricing techniques were nonexistent. The fitting of this case within the framework of spatial interdependence (demand) is therefore covered over by other forces. According to the spokesmen, the search for maximum sales superceded the desire for least cost. They hold that delivered price is only one determinant of sales radius and at times slight increases in this price are less limiting to sales than failure to comply with elements of the revenue-increasing (demand) factor. Close contact with the consumer, they assert, is the vital location factor in this field of economic activity. It follows that the maximum profit location involves some balance between cost, demand, and cost-reducing and revenue-increasing factors in endeavor to find the best plant site.

Census Data. The above analysis was based on considerable correspondence and an interview with the owners of the wood and metal pattern shop under study. If these spokesmen concealed or omitted relevant locating factors, the discussions are faulty to that extent. The data which are indicated above report only the determinants that were stressed by the co-operating plant officials. Another type of analysis (census studies) presents now the search for factors that were withheld or overlooked;¹³ in a way, it

serves as a check on respondents. The details of this extraexamination, being difficult to handle in small space, are omitted, leaving only a few brief words of end conclusions.

The census does not include statistics of sub-industry groups when few firms belong to the sub-industry. This practice seeks to avoid disclosing definite or approximate information on individual establishments. Because there are only a few wood and metal pattern shops in Alabama,¹⁴ the statistics for this particular activity have been withheld. The following comparisons therefore are not between wood and metal pattern shops but the special machine industry group of the East-South-Central States and the United States.¹⁵

selection of a plant site are not always easily recalled years later. Depending upon the person, memory either shades or stresses past thought processes. Some location determinants are forgotten, others are magnified. Despite one's integrity, responses obtained years after the given act are often unintentionally colored. Second, in order to gain increase in validity and to obtain a deeper understanding of the site-selection studied herein, the answers of the spokesmen must be supplemented and/or checked. By reference to the census reports and other sources of information, some insight is gained into (1) competitive positions and (2) location determinants which were concealed or omitted by the plant official for reasons of security, bias, or forgetfulness. An investigation of this kind to be presented over these particular pages assumes that the locator estimates his competitive position and establishes his firm with knowledge of the cost advantages or disadvantages of the chosen location.

¹⁴ In fact, as late as in the 1939 census, only one firm was listed in the census reports for Alabama.

¹⁵ Of the several possibilities open for comparison, each has decided weaknesses. Thus, for example, the larger industry group to which wood and metal pattern shops belong (the special machine industry) may be compared with the analogous grouping for the United States. This technique results in comparisons between industrial groups which include many different types of firms. The obvious weakness of this comparison is further emphasized by the fact that the census does not separately enumerate the special machine industry group in Alabama but combines statistics for Alabama, Kentucky, Mississippi and Tennessee. The shortcoming of using area statistics would be offset by comparing the "not classified elsewhere" industries of Alabama (this group includes Alabama's wood and metal pattern shops) with the wood and metal pattern shops of the United States. The advantages of providing state statistics, instead of area statistics, is, however, overbalanced by the greater dissimilarities of firms included in the not classified elsewhere group, and, as such, it is believed that the initial system is the better of the two. Accordingly, the comparisons herein

¹³ There are two main reasons for this additional investigation: First, it should be realized that a location decision results from an individual's estimates and anticipations at a given time; but that the conclusions responsible for the

Reference to the data shown in Table I reveals that each dollar in wages in the East-South-Central States yielded almost the same value added as it did throughout the United States. Moreover, addition of value in columns IV and V sums up to processing burdens which were 66.38 percent of final product value in the selected

southern states, and 66.63 percent for all states. The census reports therefore suggest that these southern states do not possess a definite cost advantage in the special machine industry group.

Southern entrepreneurs, in this line of activity, may gain a cost advantage from factors not included in the census reports.

TABLE I—SOME STATISTICAL RATIOS PERTAINING TO THE SPECIAL INDUSTRY MACHINE GROUP IN 1947

	I Average Wages (Dollars)	II Value Added Per Man Hour (Dollars)	III Value Added Per Wage Dollar (Dollars)	IV Cost of Ma- terials, Fuel, Power, and Contract Work to Final Product Value (Percent)	V Wages to Final Product Value (Percent)
East-South Central..	2,285	4.81	2.11	35.92	30.46
United States.....	3,063	6.48	2.12	36.74	29.89

Thus, it is possible that the southern entrepreneur may take advantage of the lower wage offered in this region by employing less capital in his productive process. This practice might account for the relatively low value added per man-hour in these plants. It may also indicate a greater return on investment for the Alabama firm. The other side of this same thing suggests that if plant investment is comparable everywhere, the southern firm should reap a cost advantage. Significantly, these plant officials eulogized their assembly facilities "inferencing," but not more, the probability that investment does not differ among pattern shops; moreover, census data suggest equality of cost. One might conclude with a cautious "even if assump-

tion" by pointing out that even if it is assumed that a lower capital investment per worker does exist in the south, it is doubtful whether this factor operated as the general locating force for *this particular firm*. Plant officials profess lack of precise knowledge of relative capital investment. They maintain that, with other forces playing secondary roles, their choice of general market area was based upon the belief that the South was expanding very rapidly and that there was an insufficient number of wood and metal pattern shops in this area to supply the demand for this product. Within the general area, they claim that their primary motive in location was to find for noncost reasons a site physically proximate to the buyer. These considerations suggest that plant site-selection involves a balancing among diverse kinds of location factors and not simply computation of costs at alternative sites.

(Continued from page 157)

are between the special machine industry group of the East-South-Central States and the United States.

The census data used for this study may be found in the *Census of Manufactures, 1947, Statistics by Industries*, Bureau of the Census, United States Department of Commerce, Vol. II (Washington, D. C.: United States Government Printing Office, 1949), p. 688.

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The Narrow Fabric Mill

The leading product of the narrow fabric mill is zipper tape. This good is used largely in the manufacture of clothing, principally women's garments. Because demand of the ultimate consumer varies not only with style but with season, industrial buyers of zipper tape can ill-afford to accumulate large stocks. They therefore buy chiefly on a hand to mouth basis and place a large premium on speed of delivery. From top to bottom this industry is characterized by these features as well as the need for flexibility in productive processes.¹⁶

The Transport Cost Factor of Location. There are two general types of zipper tape: nonstandard color of tape, and the white and the black.¹⁷ These tape products are sold to zipper manufacturers who sell to clothing manufacturers. Some stocks of standard color of tape are accumulated by zipper manufacturers, but only rarely do they buy nonstandard color of tape in advance of order. While some defections may arise in attempts to comply with this buying policy, it is still broadly true that zipper tape manufacturers sell nonstandard (color) tape only if able to meet special demands quickly. Time of delivery is of the essence¹⁸ for all tape of unusual color.

The purchasing of standard color zipper tape has crystallized largely around these same practices. Most sales

of white and black tape are made on the basis of immediate delivery.¹⁹ Because many final consumers have concentrated in New York, suppliers situated far from this site are cut off not only from the "off-brand" color market but they are also at a competitive disadvantage with respect to standard color tape. This time factor largely rules out water transportation and forces utilization of speedier means of delivery. Motor trucking from door to door is widely used to keep freight costs down for this product. Rail facilities (express) are employed only in special cases which require faster services.

The spokesman for this firm is well satisfied with the rail and truck service in Alabama; though, of course, the distance from the market increases time of delivery and eliminates completely the "special color market." The mill has obtained a satisfactory portion of the standard-color-tape market, centered in Philadelphia, yielding the New York market to competitors situated closer to this source of demand.

Label tape is also an important product of this company. Here too similar difficulties are encountered, though the greater spatial scattering of sales reduces the significance of the aforementioned disadvantages. A substantial part of the label tape produced by this firm is sold to printers in Michigan.²⁰ The Alabama firm is less disadvantageously situated (in the "time" sense) to these buyers than it is in regard to the buyers of zipper tape.

Shoe bindings and carpet bindings are also made by this firm. These items represent a much less important part of

¹⁶ See Alderfer and Michl, *Economics of American Industry*, 1st ed. (New York: McGraw Hill, 1942).

¹⁷ The demand for "off-brand" color tape is highly unpredictable.

¹⁸ The time factor is related to the transportation factor, and it is also a determinant of the size of the market area. It expresses itself therefore in several ways: (1) the transportation service, (2) the transportation cost, and (3) the part of the market which is available to a seller. Because the time factor not only influences transfer cost, but also the size of the market area, avoidance of some repetition in analysis of it is impossible. To reduce the repetition to a minimum, the present section on transportation will fully examine the time factor as it affects this firm. Only a brief reference to this discussion will be made in the section on revenue-increasing factors.

¹⁹ In addition to the actual transport charge, there is a premium on speed and reliability of service. This premium is called transfer cost by Ohlin, *Interregional and International Trade* (Cambridge, Massachusetts: Harvard University Press, 1935), p. 142.

²⁰ These printers insert the name of the manufacturer on the label and then distribute same to the final manufacturer.

the business than the tape products.²¹ The major buyers of shoe bindings are located in St. Louis and in many parts of Ohio. The carpet binding market is scattered throughout 38 states.

A slight weight loss of about 4 percent occurs in the fabrication of tape products. There is even a smaller loss in weight on other items. Raw materials are received on a delivered price basis, principally from suppliers in North and South Carolina. The spokesman did not know the precise boundaries of the supplier's delivered price zones.²² His opinion was that for distances of 200 or 300 miles from the raw material supplier the market pull outweighs the attraction of the material. He was uncertain as to relative pulls in case of greater distance. Probably, if such information were obtainable, it would be found that the market pull is even stronger when distance from both materials and markets increase. On the finished product, some freight is also absorbed. Freight rates on raw materials and final goods are substantially equal. The sum of all transport costs is estimated at about 5 percent of total costs.

These data indicate that freight is a relatively unimportant cost factor in this line of activity. They also suggest that the market pull is only slightly stronger in influence than that of the raw material. It must be concluded that the "transport cost" factor could be significant only if these costs, though small, varied more than other charges at alternative loca-

tions.²³ If this were so, sites in or near Virginia, Pennsylvania, New York, Delaware, etc. could have been selected. On the basis of service (time), the site selected would have been in the Pennsylvania-New York region.

Other Cost Factors of Location. The largest single expenditure for this firm is its raw material outlay. This item runs about 40 percent of total costs. Despite the high ratio, raw materials are not believed to be an important factor in determining the best plant site for a narrow fabric mill. The spokesman for this firm claims that the net-mill price charged him by his supplier is substantially the same as the price charged other buyers. Furthermore, he maintains that the raw materials needed in this industry are readily available to users regardless of their location.

It might be noted in this connection that the existence of delivered price zones in this industry implies price discrimination in favor of distant buyers; this condition in turn indicates different net-mill prices for buyers which are equalized by freight differentials from the supplier's mill to the buyer's site; it suggests this factor (cost of materials) as the corollary side to our discussion on transportation. Again, the pull of the discrimination probably would be toward market orientation, with chance of gain to distant buyers who could arrange cheapest modes of transport on raw materials. But most important from the standpoint of the actual location is the spokesman's belief. His opinion that the

²¹ About 10 percent of total gross sales are attributed to shoe and carpet bindings, sales of which products are actively being pushed.

²² The seller's shipping zones created under the delivered system are not available. But, if the rate gradations are slight between zones, not only would the principle hold of minimizing freight by selection within a zone of a site that is distant from the supplier while toward the market, but indeed crossing of zones to get nearer the market could be freight reducing. This is especially true in the present case where the final (tape) products are also sold at fixed delivered prices; in effect, this means freight absorption by the narrow fabric mills.

²³ The Area Development Division of the United States Department of Commerce lists raw materials, markets, and transportation facilities as important determinants, but not as most vital factors in location of textile plants. See *Basic Industrial Location Factors*, United States Department of Commerce (Washington, D. C.: United States Government Printing Office, 1947), p. 6.

Also see The Metropolitan Life Insurance Co., *Industrial Development For A Community*, (New York: 1937), p. 10, where of eight location determinants for this industrial group, markets and materials are respectively listed as second and sixth in importance.

cost of materials is the same for all buyers signifies the fact that this force, when related apart from its transportation side, did not exert an influence on the location of his firm.

The wage payments of the subject firm are estimated at 25 percent of total costs. Although this ratio is smaller than that of raw materials to total costs, wages are considered to be the more vital to plant location because of their greater variability. The larger differences in these burdens at alternative locations, plus the height of this ratio, make labor more important in site-selection than *transport* costs.

The absence of any law regulating woman labor in Alabama presented a real advantage to this firm. It permitted 3 shifts without special safeguards or penalties if women are employed on the third shift. Indeed this factor would help the company compete with more advantageously-situated rivals in the Mid-Atlantic region. It would not be surprising if this had been the primary locating factor but, according to the spokesman, it was not. He was unaware of the restrictions on female labor imposed by most states and accordingly adopted his location without knowledge of this advantage.

The spokesman claims that the mill's wage payments are slightly lower than those that are paid to workers in other regions. He praises the productivity of his workers and emphasizes their low turnover. In general, this owner believes that labor costs are favorable at his location though the short supply of skilled weavers and loom fixers is a definite problem. Despite general satisfaction with this factor, the spokesman denies the primacy of its locational force.²⁴

²⁴ Labor is unorganized in this plant, which status is desired by the owners. The spokesman believes that a slight labor cost advantage along with technical efficiency of

The price of capital is cited by the spokesman as an important locating factor. His firm readily obtains funds at low rates from banks in the locality. This ability is attributed to the interlocking directorates between this new firm and an older one engaged in a similar line of activity in the same environs. The bankers are acquainted not only with company officials but also they understand the problems of textile manufacture. The result has been general availability of funds on satisfactory terms. Capital is, *in a sense*, both a governing and specific factor in this location; but, because capital is related to a more general consideration, further discussion of this factor will be delayed.

The spokesman for the mill mentioned a five-year county tax exemption of property. The savings obtained under this practice are approximately \$.005 a unit of product. This tax exemption is not of great significance though it improves the competitive position of the firm.

Payments for land and building are regarded as moderate to cheap when compared to other southern locations and lower than the sum paid for like properties in the north. Thus a relatively smaller amount of equity capital is needed here than is required on the average at other sites. The spokesman claims that this advantage is much too small to be a governing or even secondary force in location.²⁵

This industry requires constant temperatures and high humidity in its productive process. Though the local climate is claimed to be as nearly perfect as possible, air humidifiers are used in

management enable his firm to compete with rivals who are located nearer to the market.

²⁵ It is significant that a neighboring community offered a rent free structure to this company for a period of years. However, the estimated savings of less than one cent a unit of output was considered to be too unimportant to warrant the location.

the plant. The cost (including freight) of this and other equipment is slightly higher at the chosen location than for competitors situated in more industrialized regions. These disadvantages are of only minor importance.

In summary of vital cost factors, it is claimed that transfer relations are poor at the chosen location, labor costs are satisfactory, tax incentives inducing, land (including building) costs advantageous, and capital generally available.²⁶ In the locator's process of decision, none of these factors (except perhaps capital) were so favorable as alone to warrant the regional or specific location. In fact, the company President anticipated a cost disadvantage relative to northern competitors at the time of his firm's location.

The Demand Factors of Location. The spokesman of the subject mill maintains that he selected his plant-site without regard to competitor's locations. He further contends that his site does not offer a market area advantage but, on the contrary, is disadvantageous in this respect. He claims locational advantage only in sales of carpet binding.

Because the ultimate consumer demand for the output of the firm is in general a capricious and volatile one, it would appear that a location near to buyers would be selected.²⁷ This company actually disregarded this influence. Neither the Alabama or southern markets are sufficiently large to attract the narrow fabric mills.

The demand side of the picture was not wholly negative, for the belief pre-

vailed that *eventually* the southern market would mature. The idea of "first come first served" existed in the minds of the owner of this company and the good will attached to a long southern occupancy appeared to offer a future advantage. This consideration was however scarcely causal. The spokesman for this firm like those of the pattern shop claims that the demand factor, especially competitor locations, did not influence his selection of a plant site. Significantly, equalizing delivered price systems are followed generally in this industry. On a priori grounds, we thus would anticipate the relative unimportance of the demand factor's tendency to cause firms to disperse for purpose of monopolizing selected segments of the market.²⁸

The Cost-Reducing Revenue-Increasing Factors of Location. The narrow fabric mill was the offspring of a well established organization in the same area. The almost identical location of these firms and their interlocking directorates led to many advantages. At its inception the newer concern let out the necessary dye work to the older company. The charges for this service were nominal and continued in force for several years. During its early life, the subject firm employed certain salesmen in quasi-partnership with the older company. This arrangement was designed chiefly for the benefit of the new firm.

Other cost-reducing and some revenue-increasing advantages were offered at this site. The common association in the same community and the joint use of salemen suggested the possibility of trading on the good will of the older company. Further, the directors of the two corporations realized that a nearby location would make for more efficient control of the two businesses. And finally, it may be noted that the principal stockholder and

²⁶ Power and fuel costs were regarded as insignificant factors which offer neither advantage nor disadvantage.

²⁷ See Hoover, *Location Theory And The Shoe and Leather Industries* (Cambridge, Massachusetts: Harvard University Press, 1937), p. 176. Emphasis on styles has caused increased importance of markets. Under modern exigencies of speed and style, more distant manufacture has been hampered. The manufacturer in the large town can make more frequent sales canvasses, quicker deliveries, and better credit management; he can keep more closely in touch with changes in style.

²⁸ See footnote 7.

President of the company (a native of another country) has not lived elsewhere in the United States. His business contacts with bankers and tradesmen were made while in the service of the older organization in this locality. These contacts offer some benefits in partial compensation for the belief that, (1) cost including freight would be higher in Alabama than at northern sites, and (2) that a time disadvantage would severely limit this firm's line of products. They (contacts) are the factors which helped justify the establishment of the plant at this particular site.

Purely Personal Considerations and Plant Location. The President of the mill claims that his own purely personal considerations governed the location. This factor limited selection of the plant site to Alabama, for this spokesman maintains that he would not leave Alabama except for an *extremely large and assured premium*.

Despite the seemingly non-economic qualities of such location, this case reveals aspects of rational economic behavior. At another location, the principal stockholder, President, and manager would regard the future with hesitancy. At this present location the necessary technical advice, comradeship, and good will are present. Rather than take higher risks for greater rewards, smaller risks in exchange for lower returns were sought. Faith in technical prowess and a stimulating and desired home environment dominated. Economically, the location is not determined by cost, or demand, in any of their forms. The purely personal reasons prevail. They find economic expression in the sense that a small sure profit exceeds none at all.²⁹

But note, this owner would not have located elsewhere for a large sure profit; such reward would have had to be *extremely* large and sure. Indeed, the minimax position sought involved compromise between business profits on one hand and personal gratifications on the other, manifesting the fact that economic behavior as reflected in the theory of games is not restricted to compromise between large uncertain profits and small sure profits but includes the personal factor as well. Many forces may form the outcome distribution of an action.³⁰

Census Data. Before turning attention to census data, it is desirable to summarize again the transportation cost and the cost factors. The spokesman for the mill believed that transfer relations would be poor at the chosen location, but, that labor cost would be satisfactory. Capital was expected to be generally available, while tax advantages and low real estate costs were anticipated. None of these factors (except perhaps capital) was so

²⁹ See Alchian, *Ibid*, p. 212: "Each possible action has a distribution of potential outcomes . . . Essentially, the task is converted into making a decision (selecting an action) whose potential outcome distribution is preferable, that is, choosing the action with the optimum distribution, since there is no such thing as a maximizing distribution . . . Suppose one has the higher "mean" but a larger spread, so that it might result in a larger profits or losses, and the other has a smaller "mean" and a smaller spread. Which is the maximum?" And see J. Marschak, "Rational Behavior, Uncertain Prospects, and Measurable Utility," *Econometrica*, April 1950, p. 131: ". . . whether high variance of random incomes (or of the random quantity of any commodity) is or is not desirable depends on whether the marginal utility of mean income (or commodity) happens to be increasing rather than decreasing."

And see G. Tintner, "The Theory of Choice Under Subjective Risk and Uncertainty," *Econometrica*, July 1941, pp. 298-304, and also "The Pure Theory of Production Under Technological Risk and Uncertainty," *ibid*, pp. 305-311; the general theme of these articles is that an individual wants to maximize his own subjective utility in planning a productive scheme, as well as to maximize the productive scheme.

Patently, the minimax principle [that is, the saddle point of game theory; see von Neumann and Morgenstern, *The Theory of Games and Economic Behavior* (Princeton, New Jersey: Princeton University Press, 1947), p. 95] may involve compromise between business profits on one hand and personal gratifications on the other, just as well as it may entail compromise between large uncertain profits and small sure profits.

³⁰ See A. Alchian, "Uncertainty, Evolution, and Economic Theory," *Journal of Political Economy*, June 1950, pp. 211-221, and see particularly p. 213: "Realized positive profits, not maximum profits, are the mark of success and viability . . . This is the criterion by which the economic system selects survivors: those who realize positive profits are the survivors; those who suffer losses disappear."

favorable as singularly to warrant the location. In fact, the company President anticipated a slight total cost disadvantage relative to his northern competitors at the time of his site-selection.

In 1947³¹ the average annual wage in the East-South-Central States³² in this industry when related to total product value presented slight disadvantage to southern firms. As shown in Table II, cost of materials, fuel, power, and con-

tract work offset, however, this labor disadvantage. It may be that southern workers (or their equipment) waste relatively smaller amounts of materials or fuel and power in fabricating the final good. Significantly, full costs appear largely equal at north and south locations.

These data support the claim of the spokesman that the time delay is the main disadvantage to which his firm is

TABLE II—SOME STATISTICAL RATIOS PERTAINING TO NARROW FABRIC MILLS IN 1947

	I Average Wage	II Wages to Value Added	III Wages to Total Product Value	IV Cost of Materials, Fuel, Power, and Contract Work to Total Product Value
East-South-Central.....	\$1,719	51.07%	28.24%	44.71%
United States.....	\$2,071	47.69%	24.46%	48.48%

subject. Additionally, one might add that the relatively higher transport cost on finished products suggests further disadvantage in Alabama locations for plants of exactly the same type. However, land value gains and tax offsets may exist in many cases. Shifts in markets and slight difference in importance among several final products may also prevail for other companies. Indeed, the potential market in the south may be

all controlling. In any case, census data do not refute the claims of the spokesman.

Empiricism, Theory, and the Cases Studied Here Conclusion

By the very nature of its science, economics stresses empirically supported assumptions in order to establish deductively valid theorems.³³ Hence, its method is in sharp contrast to the physical sciences where the validity of basic postulates (for example, force) is obtained generally by indirect confirmation of assumptions through the test-proven theorems which were the logical consequences of the assumptions. In economics, we test, *in general*, the relevancy of the assumptions, not the end theorems; this forms the main purpose for

³¹ The census data used here can be found in the *Census of Manufactures, 1947*, Bureau of the Census, United States Department of Commerce, MC 24A (Washington, D. C.: United States Government Printing Office, 1949).

³² As of 1947, there were 12 Narrow Fabric Mills in the East-South-Central States. Of this group, 9 were Alabama firms. Though the 1947 census does not distinguish between these mills (in Alabama, Tennessee, and Kentucky), the combined figures are nevertheless applicable because they are weighted so heavily by Alabama firms. It may appear from the above data that Alabama had a sizeable share in this line of activity. However, it should be noted that the value added in the East-South-Central States was only 17 percent of the value added in the South-Atlantic States, 4.9 percent of the value added in the Mid-Atlantic States, and about 2.5 percent of the value added in the New England and Mid-Atlantic States.

³³ F. S. C. Northrup, "The Impossibility Of A Theoretical Science of Economic Dynamics," *Quarterly Journal of Economics*, November 1941, pp. 1-17.

empiricism under present economic scientific framework and method.

The case studies recorded here are illustrations of empiricism designed to uncover factors of location which should form the central core of future deductively obtained theorems. Under its findings, any economic theory that is constructed on spatial properties must assume much more than just the traditional cost factors of location in order to gain generic validity.³⁴ Significantly, we find from the present case studies (1) that the factors of location are many, (2) that the cost-reducing and revenue-increasing factors may be vital to economic model building, and similarly so for (3) purely personal considerations. But, in fact, we learn even more than the relevancy of assumptions in case studies; we obtain as a special dividend specific data about things, industries, or people which will be of value in many kinds of economic speculation. These are the main contributions of empirical studies. The case studies examined here, though not relating importance to all of the enumerated factors of location, emphasize at least many different varieties of location factors—more than have customarily been used in economic models. The details of its rewards to the location theorist are summarized below for those who are interested in these technical specifics.

Summary

The empirical studies described above pointed out several things to the location theorist: First, even though some buyer concentration existed in leading cities, the basic pattern of consumer location was dispersion. This overall scattering

of consumers fulfills the fundamental assumption of the market area school of location analysis. Its theory of locational interdependence therefore becomes applicable. Under this theory each supplier should seek location away from rivals in order to gain lower total delivered-to-customers cost to selected consumers. The initial empirical study revealed, however, that total delivered-to-customer cost at a given point was a secondary consideration; moreover, locational avoidance of competitors was not stressed. The discovery of a location from which plant officials may travel quickly to customers, and *vice versa* was all prevailing. In the second case, the dispersal effect that one anticipates generally from the demand factor was played down by the existence of discriminatory price systems. These price practices, if they yield substantially homogeneous delivered prices to selected buyers, have the effect of causing firms otherwise distant from a given market to appear as if they are located as proximate to that buying center as are plants linearly nearer to such market center. They signify that factors other than demand alone are probably controlling. Most significantly for the purpose of this summary, they suggest an institutional innovation which makes a space economy appear as if confined to a point. The extent to which these considerations affect the economist's objective of explaining spatial orderings of business units and of defining the particular and general equilibria of capitalistic economies is one problem for future determination. Patently, a prerequisite to this problem is the construction of a broader model of location theory than those that are generally existing today.

Second, the economist is concerned with the manner in which the site was selected. Was the selection the outgrowth of rational economic incentives,

³⁴ See Lionel Robbins, *The Nature and Significance of Economic Science*, 2d Ed. (London, England: Macmillan and Co., 1946) pp. 94-99; A. Losch, *Die räumliche Ordnung der Wirtschaft* (Jena, Germany: Gustav Fischer, 1944), i.e., p. 19; M. L. Greenhut, "A General Theory of Plant Location," *Metroeconomica*, August 1955, pp. 59-72 for problems of generic validity in economics.

or was it colored by sociological and psychological stimuli? If it was not selected in deference to the profit motive, to what extent would such deviation impeach the assumptions in economic theory and thereby destroy the econometric research activities of some theorists? Or, otherwise expressed, to what extent would a broadening of basic postulates in economic theory be in order?

Third, the economist is concerned with checking those factors that influence the site-selection of different size firms and of different types of industry. The cases

presented here offer one corner to a rapidly growing structure of empirical studies. These studies advise the extent to which the market area of firms are hexagonal or circular, etc. and under what conditions a spatial equilibrium will be formed.

And finally, the economist may concentrate his examination of cases on the impact of institutional changes on spatial orderings. Indeed, he may project future developments in deriving, among other things, a long-run analysis of the importance of location factors.

Urban and Inter-Urban Economic Equilibrium

By ROBERT L. STEINER*

THE subject of this study is the modern industrial city. This is the region that the census taker calls "the metropolitan area" and that Vining has referred to as "the market area of the residentiary industry that naturally crystallizes around a localized core of primary industries."¹

Further explorations into the economy of the city are not only theoretically necessary, but should be of immense practical aid to those interested in urban problems of all sorts.

The Primacy of Exports

Whether it be in Detroit or in the smallest mill or mining community, the man on the street understands that his town's prosperity at any time depends on how its export industries are doing. Even so, economists have not always sufficiently emphasized this primacy of exports in urban areas, nor perhaps thoroughly understood it. By exports, we mean all goods and services sold to persons and firms residing outside the city.

Today's city like modern man himself is a specialized and hybrid sort of creature. Lacking practically all of the requisite food and industrial raw materials, its inhabitants are unable to live by taking in each other's washing. They must import. The more the city exports, the more imports it can command, the more population it can support. Florence, Vining, Roterus and other regional economists all find that exports account for about one-third of the employment in the modern industrial area. Manufactured goods are the lead-

ing exports, followed by wholesaling and transportation.²

The Residentiary Segment. In itself a rise in the city's exports does not satisfy the demand for imports but only puts additional dollars into the hands of the city's inhabitants. To turn these dollars into food, clothing, housing, services and other wants, an increase in the residentiary segment is required. The residentiary segment, which of course sells its output in the local market, accounts for about two-thirds of the city's employment.

Balance Between the Export and Residentiary Segments

Because no industrial area can specialize in more than a few manufactured goods, it must import a long range of finished and semi-finished goods. These, in addition to food and raw materials, form a substantial hard core of imports which must be paid for by a substantial hard core of exports.

Similarly, there is a nucleus of jobs which must be performed by the residentiary section. This is not a question of performing functions locally rather than importing because there is a moderate cost saving in so doing. Rather it is a matter of having to pay so much more in dollars, time, or convenience to import, that it is out of the question. Who but residents of the city could retail its consumer goods, furnish local transportation, or provide entertainment, repairs, local construction or the basic professional and city governmental services?

In addition, many other industries are so strictly market oriented for reasons of perishability (bakeries), need for close

* Cincinnati, Ohio.

¹ R. Vining, *Econometrica*, July 1946, p. 202.

² Roterus found in Cincinnati, which is fairly typical of the larger metropolitan areas, that manufacturing accounted for 80 percent of exports.

contact with the customer (job printing), or exorbitant weight in relation to value (bricks) that they must also be residentiary. The consequence of there being such a large hard core of imports and large hard core of residentiary occupations is that there is a relatively small number of jobs which could be performed either locally or by foreigners. This group of occupations, which I call "indifferent" jobs, consists mainly of finished and semi-finished goods, and specialized services and wholesaling functions.

While data on the subject are certainly needed, it would seem that 28% of the working force would be a minimum for the export segment and 55% for the residentiary sector, leaving 17% as the maximum percentage of the working force in the "indifferent" category.³

Thus an area of equilibrium within a city is achieved when approximately one-third of the working force is in exports and the remaining two-thirds in residentiary industry. It is interesting to note that this applies to urban areas and not to diversified rural communities

where farmers have a substantial ability to convert their output to and from the home and the export markets.

Equilibrium Demand and Supply for Residentiary Output

The demand of a city for goods and services is a demand for imports and for local labor to further fabricate or at least to distribute these imports. Because of the small percentage of "indifferent" jobs the demand for residentiary output may be treated as a joint demand for imports and local factors of production in a fairly fixed proportion.

When the demand for residentiary output equals the value of residentiary output we have another way in which the economy of the city may be in a rough sort of aggregate equilibrium. An analysis based on this equilibrium concept yields a number of insights into the workings of an urban economy. The value of residentiary output, which makes up the supply side of the equation, is the sum of two components—imports used by the residentiary sector (I_r) and value added locally in residentiary industry (L_r) and thus can be written as $I_r + L_r$.

The demand for residentiary output is generated primarily by the spending of factor payments from current local residentiary production (F_r) and current local export production (F_e)—the source of both of these being the value added in residentiary and export industries. Thus the demand for residentiary output = $F_e + F_r$.

However, the demand for residentiary output is only in its simplest form equal to the amount of local factor payments in residentiary and export industries. The letter Q is used to represent the amount by which the demand for residentiary output as expressed in terms of payments to local factors of production for current production exceeds or falls short of the

³ The percentage employed in the various industry subgroups in the Cincinnati, St. Louis, Milwaukee, Buffalo, Louisville, and Cleveland metropolitan districts in 1940 was taken. For each of the 13 industry groups the highest and the lowest percentage of employment amongst the 6 cities was extracted. An over-simplified "educated guess" was then made assigning the industry group either 100 percent to the residentiary segment or some fraction to the residentiary segment and the balance to the export segment. The lows and the highs for each industry group were then totaled for the export and residentiary segment. The sum of all the lows for percentage employment in export came to 28.8% and the sum of the low percentage in residentiary totaled 55.3% (See Table I). On this basis the maximum percentage of indifferent employment is 15.9%. To be on the safe side, in view of the crudeness of the method of calculation employed, I used 17%. However, the chances of any one city being low in every single category of export or residentiary employment are so slight that the highest percentage of indifferent jobs for all practical purposes may be nearer 12-14%. Most investigators report the percentage employed in exports in the average city is about 33%. There are, of course, differences between new and old, large and small, and fast and slowly growing cities. In general, the newer the city, the smaller the city, and the faster growing the city, the larger will be the percentage employed in exports.

TABLE I—ST. LOUIS, CINCINNATI, INDIANAPOLIS, MILWAUKEE, BUFFALO, LOUISVILLE AND CLEVELAND METROPOLITAN DISTRICTS: 1940

Industry Sub-Group	Range of % Employed in the 7 Metropolitan Districts		Estimated % of Industry Sub-Group in Residential Segment	Range of % Employed in Residential		Range of % Employed in Export	
	high	low		high	low	high	low
(1) Agriculture, forestry, mining.....	2.8	0.7	100	2.8	0.7		
(2) Construction.....	6.0	3.7	100	6.0	3.7		
(3) Transport.....	9.0	4.8	50	4.5	2.4	4.5	2.4
(4) Communication and utility.....	2.7	2.4	100	2.7	2.4		
(5) Wholesale.....	4.6	3.0	50	2.3	1.5	2.3	1.5
(6) Retail trade.....	17.6	16.1	100	17.6	16.1		
(7) Finance, insurance, real estate.....	5.2	3.2	100	5.2	3.2		
(8) Auto & repair services	2.3	1.8	100	2.3	1.8		
(9) Hotel & amusement.	2.6	2.1	50	1.3	1.0	1.3	1.0
(10) Professional.....	8.6	7.6	100	8.6	7.6		
(11) Personal and other services.....	10.9	7.3	75	8.1	5.4	2.7	1.8
(12) Manufacturing.....	39.1	28.5	25	9.8	7.1	29.4	21.3
(13) Government.....	5.6	3.2	75	4.2	2.4	1.4	0.8
Total all industry sub-groups.....				75.4	55.3	41.6	28.8

Source: U. S. Census of Population, 1940.

value of the residentiary supply in equilibrium. An important advantage of writing the equation in these terms is that the demand for labor is a function of $F_e + F_r$ while Q is not a demand for local labor.

Our equation, therefore, is:

$$F_e + F_r \pm Q = I_r + L_r.$$

Increase in Exports Analyzed. The growth of cities by means of increases in exports can be illustrated by assigning values to the equation and assuming a given export multiplier, linking an increase in exports with an increase in total output (export plus residentiary). We will use an export multiplier of 2.5 which,

I judge, would be a fair estimate for the typical industrial city.⁴

To take the simplest case assume $Q=0$ and other values as follows:

$$33 (F_e) + 66 (F_r) = 33 (I_r) + 66 (L_r).$$

Suppose we have a jump in exports of 3, where the increased demand for im-

⁴ Vining derives a multiplier of 2.0 for the Pine Bluff, Arkansas region. (*Econometrica*, July 1946, p. 216.) The difference between Vining's multiplier and ours is accounted for in two ways. First, the percentage of the working force employed in exports in the Pine Bluff area amounts to 40%; whereas 33% appears to be the typical figure for the average "city-state." Next, 56% of the population in the Pine Bluff area work in agriculture. In the more urban sort of area we are dealing with, there is less self-sufficiency and a smaller percentage of indifferent jobs, greater specialization, and thus a much lower elasticity of demand for imports. Considering only the 33% in exports, we get a multiplier of 2.33. The lower elasticity of demand for imports raises this multiplier still further, probably by around .1. We conclude that the export multiplier for our typical "city-state" is between 2.4 and 2.5.

ports used by the export segment is 1 and the increased local value added and paid out to local export factors of production (F_e) is 2.

The value of residentiary output expands by 1.5×3 , or 4.5 (of the 2.5 multiplier, larger exports comprise 1.0 and larger residentiary output 1.5). If the demand for the new residentiary output is also split in the same 1:2 ratio between imports and value added = local factor payments, then the situation becomes:

$$35 (F_e) + 69 (F_r) = 34.5 (I_r) + 69 (L_r).$$

This situation is not stable, the demand for residentiary output exceeding the supply by 0.5. Aggregative equilibrium will be approached by small adjustments involving slight expansions of I_r , L_r , and F_r .⁵

Difficulty of Urban Growth without Increased Exports. The difficulty of growth by an autonomous increase of residentiary output can be shown by an example using our equation for equilibrium demand and supply. Suppose we again start from the same equilibrium position as in the previous example and assume a new department store and other residentiary projects are carried out resulting in an increased residentiary output of 5, of which 2 is the value of increased residentiary imports and 3 the value added locally and paid out to local factors of production. Then:

$$33 (F_e) + 69 (F_r) = 35 (I_r) + 69 (L_r).$$

Here the increase in aggregate supply of 5 exceeds that of aggregate demand (3) by the value of imports (2) which this residentiary expansion requires. Since aggregate demand is insufficient to pur-

chase the additional residentiary output at prices covering costs of production, the increased residentiary output will vanish and the economy will recede towards its original equilibrium position.

It is probably true that almost all residentiary goods are composed in part of imports and practically all residentiary services likewise require some imports to keep operating. Where this is so, less than the total value of the increased residentiary output is paid out to local factors of production, and without an increase in exports or some other form of increased local demand "to close the gap," the economy of the city cannot grow past the original equilibrium by an autonomous increase in residentiary output.

Urban Growth without Increase in Exports

Because urban economics has been until recently almost the exclusive preserve of economic geographers, the possibility of city growth or decline while exports remain constant has been largely unexplored. Assuming constant exports, let us analyze other stimuli which can influence the level of urban economic activity.

Where a city increases its net return on foreign investments, an expansion is induced in the residentiary sector. Assuming initially no net return on foreign investments, let the rent, interest, and dividends from outside holdings of the city's inhabitants increase by 5. If initially the situation had been our familiar original equilibrium of:

$$33 (F_e) + 66 (F_r) = 33 (I_r) + 66 (L_r),$$

the spending of this net return on foreign investments will result in a higher level of equilibrium being reached, wherein:

$$33(F_e) + 69(F_r) + 2(Q) = 35(I_r) + 69(L_r)$$

This postulates that the increased de-

⁵ I would not claim that the economy of a city ever reaches a precise arithmetic equilibrium either in this or in further examples. However, given the assumptions in each case, I believe we can define the general area of balance within which minor adjustments continually occur.

mand for imports is 2 and the increased demand for local value added which is paid out to local factors of production in residentiary industry is 3. Q , as previously mentioned, is not a demand for local labor and in this instance measures the excess of residentiary imports which the city can command above and beyond the sum of all local factor payments. Cities which this example typify are those having large numbers of retired persons, resort areas, and towns of old inherited wealth.

A little studied differential in cities' rates of growth is that resulting from variations in the "foreign" investment balance. Even between cities of comparable size there are vast differences in the extent to which the economy is supported by the influx of outside investment funds, both private and public. For instance, in 1935, according to "Structure of the American Economy," the 200 largest manufacturing firms accounted for 25.2% of the nation's manufacturing wage earners and in the 33 industrial areas this percentage must have been considerably higher. Yet in the same year, only 8-13% of manufacturing wage earners in the Cincinnati metropolitan area were employed by these 200 firms. If as seems likely Cincinnatians owned the same per capita value of these securities as did outsiders, then Cincinnati capital was providing more jobs in outside areas than outside capital provided in Cincinnati.

Though a net influx of capital usually means a negative balance of payments in the interest, rent, and dividend category (unless it is government investment), it is the better stimulant to economic expansion.⁶

⁶ Cincinnati grew very slowly in the late 19th century and throughout the 20th century until World War II. As stated above, Cincinnati had little outside investment to stimulate its growth. Being a city of old, inherited wealth it had a large return on outside investments. This is indicated by

Commencing again with the familiar equilibrium position, let us examine the expenditure of a net capital influx of 6 to build new factories. Factor payments in the construction of these plants are not quite in the same category as residentiary industry, since the city is not required to purchase any residentiary supply, the factor payments being financed by the foreign capital. (We are analyzing only the effects of the capital expenditure, not the output of the plants once constructed). We will therefore designate the local factor payments for this construction as F_{r1} , the value added locally as L_{r1} , and the imports as I_{r1} . If the increased demand for imports is 2, and the value added locally is 4, then:

$$33(F_0) + 66(F_r) + 4(F_{r1}) + 2(Q) = 33(I_r) + 66(L_r) + 2(I_{r1}) + 4(L_{r1}).$$

If as seems likely the residentiary segment is itself stimulated by this capital expenditure, the final result could be:

$$33(F_0) + 68(F_r) + 4(F_{r1}) + 3(Q) = 34(I_r) + 68(L_r) + 2(I_{r1}) + 4(L_{r1}).$$

Let us look at another fluctuation in the level of economic activity without change in exports—this time from the negative viewpoint. Suppose, for example that, starting again at our familiar equilibrium, economic activity is depressed by a net outflow of income taxes on consumers and an increase in the propensity to save of the public. Assume the net effect of both the above is to decrease the local effective demand for residentiary output by 5, 3 being the drop in demand for residentiary value added locally and 2 the decline in demand for residentiary imports. Then:

$$33(F_0) + 63(F_r) - 2(Q) = 31(I_r) + 63(L_r),$$

the fact that in 1936 dividends accounted for 19.9% of taxable income in Cincinnati as compared to 15.0% for all cities between 100,000 and 1,000,000 population (Computed from data in U. S. Treasury Department, Division of Tax Research, *Statistics of Income Supplement, 1936*).

assuming at this level of residuary factor payments that the combined amount saved and paid in income tax from current income is 2. Here the city cannot consume as much as its factor payments and the negative Q represents this deficiency.

A city may also grow by purchasing something locally that it has previously imported. The effect is to increase local residuary factor payments and this enlargement of demand for residuary output causes a further joint demand for residuary imports and for additional residuary labor with a higher level of equilibrium being attained involving larger residuary factor payments and a plus Q . However, since in the aggregate there is only a limited ability to substitute local labor for imports and vice-versa, growth or decline by this process cannot be spectacular.

To ascertain the general effects on the urban economy where the residuary sector operates at a net profit or loss, we take residuary imports at the price the city's firms pay for them and value added by the residuary sector as the difference between the \$ market value of residuary output as a whole and residuary imports.

Where there is a net residuary profit, F_r is less than L_r while the reverse holds where there is a net loss. Continuing operating profits initiate a downward movement while losses propel business upward. The economy could remain in constant flux or attain new positions of balance at various levels—which happens depends on two factors—(a) the amount of net residuary profits or losses at various levels of residuary output; (b) the exact ratio of residuary imports to residuary value added locally at each level of output. Under a set of not unlikely assumptions as to these two factors, the city's economy could come

to rest where there are net residuary profits at:

$$33 (F_r) + 64 (F_r) = 32 (I_r) + 65 (L_r)$$

and, where there are net residuary losses, at:

$$33 (F_r) + 68 (F_r) = 34 (I_r) + 67 (L_r)$$

With no change in exports, residuary growth can also occur with a rise in the efficiency of the residuary sector as a whole.

This can take various forms. Let us illustrate what happens where the heightened efficiency causes prices to fall and residuary factor payments to remain constant. Here an upward movement is induced which could reach a new balance at:

$$33 (F_r) + 69 (F_r) = 34 (I_r) + 68 (L_r)$$

While we are not attempting to analyze all stimuli which can affect a city's income, two other forces should be listed—

a) The comparison of the city's birth/death ratio with other cities; b) cultural or climatic advantages which attract population. Neither can be easily scrutinized by the sort of internal equilibrium process we have been using.

The Effect of Outside Cities

This paper has assumed that the demand piped the tune and the supply waltzed into place. The next step is to drop this assumption and consider what happens when two or more cities compete for the attraction of population. This is too ambitious a subject to more than summarize. However, it can be shown how population movements between cities work themselves out in such a way that a group of cities will end up not only in balance with respect to each other in the sense that there is no incentive for further population movement between the cities, but also each city will be in internal equilibrium as defined herein.⁷

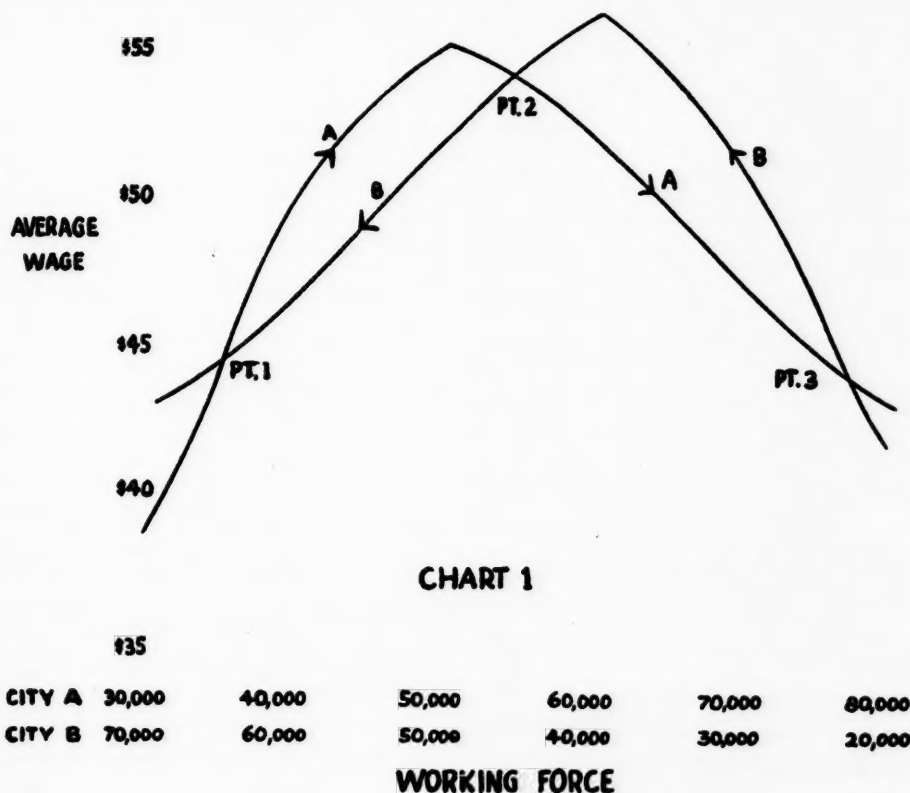
⁷ The advantage of setting up our equation with F_r and F_r being demands for local labor while Q is not a demand for local labor is apparent when intercity equilibrium is analyzed.

In its simplest form we have a two-city model. The total combined size of the working force of the two cities is constant but the workers may move from one city to the other. The basic assumption is that population will migrate to the city where average wages are higher. A schedule is constructed in each city giving the value of $F_e + F_r$ at each level of the working force. The average wage is taken as some constant function of the factor payments (or value added) per worker, and the average wage at each level of the working force is then plotted. (See Chart I.)

The reason the curves in Chart I have the shape they do is the following: In each city the export firms have a certain

rockbottom volume of business they can always do. When in either city the working force is very small, the residentiary sector is under-developed (less than twice the export sector) and also the export sector can expand tremendously with additional labor. With such an intense demand for workers, wages are high and population is attracted from the other city. After a time, the export industries find it increasingly difficult to expand output and the residentiary segment has grown into balance with exports. With the employment of more labor, the working force grows faster than output and average wages decline.

In the meantime the out-migration of workers from the marginal jobs in the



other city has raised the productivity of the remaining labor there. Soon a point is reached where the value added per worker and thus the average wage is the same in each city.⁸

⁸ Average instead of marginal wages are used because it seems more realistic to assume that if the demand for labor was higher in A than B, workers in A would be upgraded and have the first shot at the higher marginal wage. This change on the margin would not be confined to the margin but would be quickly transmitted throughout the general wage

On the chart the average wage curves for each city intersect with a negative slope at Point 2. The cities are in equilibrium since a worker from one city moving to the other could be employed only at a lower wage.

pattern. With the consequent rise in average wages in A, workers from B where the wage scale was lower would now move to A where they would find employment at the average wage.

Reports and Comments

Real Property Assessment-Sales Ratios and the Citizens Research Council of Michigan

IN the January 1955 issue of the *National Municipal Review* is a paper entitled "Tax Rates of U. S. Cities" by the Citizens Research Council of Michigan.¹ This article presents a list of ratios of assessed value to current market value (presumably for real property) for the year 1954 for cities of 20,000 population and above. In addition, data relating to assessed values, the proportion of personalty to realty, unadjusted tax rates, and the like are reported.

The study neither lists the size of the sample nor indicates sample adequacy in those instances (if there were such) where actual sales values were taken in deriving an assessment-sales ratio; nor where reliance for this ratio was on its questionnaire, the number of questionnaires returned and completed upon which an assessment-sales ratio for the particular city was predicated. It is stated, however, that "in most cases, the city and county ratios are the same";² also "where separate assessments are made and varying ratios reported, the percentage listed is a weighted average of the two."³ It is presumed from this statement that, in the absence of separate assessments for city property and for county property, the reported ratio for the city is equally applicable to the county. The change in the phrase "estimated ratio" to "reported ratio," as used in prior years, was made "to emphasize the subjective nature of the figure."⁴ That there is a high order of subjectivity in the ratios reported is indicated not only by the use of the questionnaire as a device for finding assessment-sales ratios, but by the nature of the question asked the respondents who were requested to return an *opinion* answer—rather than an answer based upon some assembly of facts. The question was as

follows: "In your opinion, what percent of the current market value of real property is the city (county) assessed valuation."⁵ It is stated further that data based upon a sampling of actual property sales are often "not available," thus "the answer to the question must be based on estimates or opinions of the correspondent or others in the community."⁶ This statement is doubtless correct in regard to the Citizens Research Council of Michigan whereby the Council is provided with an assembled, analyzed and packaged set of actual sales data from which assessment-sales ratios may be computed for the various cities included in the list. However, sales data *are* available in all the listed communities; they can be obtained if the undertaking is believed to be of sufficient importance to justify the expenditure of the time and money which such a field study requires. The observation is made that the assessment-sales ratios as estimated "may vary widely, depending upon the person estimating and the criteria used";⁷ consequently, "the assessment ratios listed should be regarded only as general guides to the existing situation, rather than precise calculations."⁸ One must certainly agree with these statements as to the lack of precision and perhaps the general undependability of the reported ratios. Also, it is to be questioned as to whether such ratios may serve as reasonably reliable "general" guides to the level of assessments as they exist.

An assessment-sales ratio study⁹ covering the entire state of Washington, with county

¹ *Ibid.*

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

⁵ Subcommittee on Revenue and Taxation of the Washington State Legislative Council, 1953-1955 Biennium, *A Study of Real Property Assessments in the State of Washington*, December 1954. Copies of this study may be obtained by writing to the Washington State Research Council, 6127 Arcade Building, Seattle 1, Washington.

¹ P. 14.

² *Ibid.*, p. 17.

³ *Ibid.*

⁴ *Ibid.*

segregation of data, was recently completed. In this survey the following assessment-sales ratios were found as listed below. These ratios may be compared with the assessment-sales ratios reported in "Tax Rates of U. S. Cities" for the seven Washington cities. It will be noted that the percentage differences between the assessment-sales ratios of the Citizens Research Council of Michigan and the Subcommittee of the Washington State Legislative Council are of large proportions for Seattle (plus 40.4%), for Spokane (plus

39.5%), and for Yakima (plus 39.4%). For Tacoma (plus 11.1%) and Everett (plus 7.5%) the differences are of more modest proportions although of sufficient size to indicate a significant margin of error. Only in the case of Vancouver (plus 5.3%) and Bellingham (plus 2.6%) are the differences sufficiently minor that the ratios are in substantial conformity. On the basis of a major disparity in the ratios for three of the seven cities, with a substantial difference for two additional cities, it is unclear how the ratios

TABLE I—ASSESSMENT-SALES RATIOS FOR SEVEN WASHINGTON CITIES (COUNTIES)

	As Found by the Subcommittee on Revenue and Taxation of the Washington State Legislative Council*	As Reported by the Citizens Research Council of Michigan**	Percent Difference Plus or Minus with Ratios Found in the Study of Real Property Assessments in the State of Washington
Seattle (King County).....	17.1%	24%	+40.4%
Spokane (Spokane County).....	21.5	30	+39.5
Tacoma (Pierce County).....	18.9	21	+11.1
Vancouver (Clark County).....	13.3	14	+ 5.3
Yakima (Yakima County).....	16.5	23	+39.4
Bellingham (Whatcom County).....	19.5	20	+ 2.6
Everett (Snohomish County).....	18.6	20	+ 7.5

* County ratios.

**These may be construed as either city or county ratios apparently.

of the Citizens Research Council of Michigan may serve as "general" guides to the existing level of actual assessments for cities in Washington. It is not known, of course, the extent to which the reported ratios may or may not be representative of actual assessment ratios for the listed cities in other states.

The Subcommittee on Revenue and Taxation of the Washington State Legislative

Council bases its ratios upon an analysis of 41,713 real estate sales of 1953 and 992 real estate sales of 1952, covering the entire state of Washington. The 1952 sales in eight of the less populous counties were for the purpose of providing a more adequate sample.¹⁰

¹⁰ Adams, Columbia, Ferry, Garfield, Lincoln, San Juan, Skamania, and Wahkiakum Counties.

All *usable* 1953 sales were included in the study except for King, Pierce, Snohomish, Spokane, and Whatcom Counties. For the above counties in which only a portion of total usable sales were included in the sample for the purpose of ratio analysis, sample size, subject to test, was found to be more than adequate. Consequently, the reported measures of central tendency, coefficient of dispersion, and the like rest upon a statistically reliable sample. On the other hand, for the eight counties in which usable 1952 sales were added to the 1953 sales in order to amplify the sample, the size of the county samples, Adams County excepted, was believed to be somewhat inadequate for full reliability.

Other counties in which dependence was upon 1953 sales exclusively, and in which the total of such sales suggests somewhat marginal sample reliability, are Pend Oreille, Douglas, and Jefferson Counties, with total sales of 267, 349, and 350 respectively.

TABLE II—SAMPLE SIZE AND PERCENT TOTAL USABLE SALES (ESTIMATED) OF COUNTIES IN SURVEY

Counties	Number of Sales in Sample	Percent of Sales in Sample to Total of Usable 1953 Sales (Estimated)
King.....	5,341.....	25%
Pierce.....	3,007.....	60
Snohomish.....	2,410.....	50
Spokane.....	4,693.....	60
Whatcom.....	1,271.....	67

The question directed to respondents by the Citizens Research Council of Michigan does not make clear whether the average, the median, or the aggregate assessment-sales ratio is the subject of inquiry. It is presumed, perhaps incorrectly, that the average ratio (arithmetic mean) is the ratio implied in the question. Should the reported ratios in this

TABLE III—COUNTIES IN WHICH TOTAL USABLE SALES FOR YEARS 1952 AND 1953 ARE COMBINED

Counties	Usable Sales		Total Usable Sales
	1952	1953	
Adams.....	243	207	450
Columbia.....	87	68	155
Ferry.....	95	70	165
Garfield.....	55	51	106
Lincoln.....	183	156	339
San Juan.....	124	110	234
Skamania.....	144	164	308
Wahkiakum.....	61	54	115

study refer to the median or the aggregate ratio, then the percentage differences between these ratios and the ratios found by the Subcommittee on Revenue and Taxation of the Washington State Legislative Council would be substantially greater than is indicated in Table I.

The importance of specifying clearly the measure of central tendency used in establishing the assessment-sales ratio is revealed in Table IV by the substantial disparity existing between the mean and the median ratio, and between the mean and the aggregate ratio. While all are measures of central tendency, and while all these measures are

TABLE IV—ASSESSMENT-SALES RATIOS FOR SEVEN WASHINGTON CITIES (COUNTIES)

As Reported by the Citizens Research Council of Michigan		As Found by the Subcommittee on Revenue and Taxation of the Washington State Legislative Council		
		Average (Mean) Ratio	Median Ratio	Aggregate Ratio
Seattle (King County)	24%	17.1%	14.6%	15.9%
Spokane (Spokane County)	30	21.5	19.1	19.2
Tacoma	21	18.9	17.4	17.4
Vancouver (Clark County)	14	13.3	8.8	11.2
Yakima (Yakima County)	23	16.5	12.9	13.5
Bellingham (Whatcom County)	20	19.5	13.4	14.3
Everett (Snohomish County)	20	18.6	15.3	16.4

more or less commonly employed in assessment-sales ratio analyses, the particular measure used in a given study should not be left in doubt.

The assessment-sales ratios reported in the study of "Tax Rates of U. S. Cities" are stated to be inclusive of both city and county ratios. This suggests that, in the absence of separate city and county assessments, real property in the county will be assessed at the

same ratio which prevails in the city.¹¹ It is not believed that this conclusion has any real basis in fact. Assessment-sales ratio studies over the years have disclosed that city and county real property customarily receives different assessment treatment even under the same assessment authority; further, that different classes or types of property within a city, or within a county, may be subject to significant variations in the levels of assessment. Important limitations are thus found in the use of the "average" ratio for all real property, city or county, or both, in any analysis of assessments.

It will be noted that mean levels of assessment range from a low of 15.7% for rural property in King County to a high of 27.5%

for retail stores. The measure of distortion or discrimination in assessments among parcels of property in each class is found in the coefficient of dispersion¹² which ranges from a low of 25.9% for multiple family dwellings to a high of 53.6% for vacant land. This indicates that an average assessment ratio may be decidedly non-representative of the actual assessments of individual parcels of property within a class as well as for all classes of property.

In Tables VI, VII, and VIII distributions of mean assessment-sales ratios may be observed for single family dwellings and vacant land by incorporated and unincorporated areas in King County, by areas in Seattle, and by unincorporated areas in

TABLE V—ASSESSMENT-SALES RATIOS BY PROPERTY TYPES IN KING COUNTY, WASHINGTON*

Types of Property	Number of Sales	Average (Mean) Assessment Ratio	Coefficient of Dispersion
Single Family Dwellings.....	3,712	15.9%	31.6%
Vacant Land.....	1,299	19.6	53.6
Multiple Family Dwellings**.....	149	18.5	25.9
Retail Stores**.....	108	27.5	51.7
Duplex Dwellings.....	88	17.2	26.6
Miscellaneous Improvements.....	67	20.0	52.2
Rural Property.....	37	15.7	41.9
Motels**.....	20	18.8	32.2
Industrial Improvements**.....	14	27.2	35.4
Warehouses**.....	9	26.0	33.9
All Property (original sample only).	5,341	17.1%	40.1%

*Subcommittee on Revenue and Taxation, *op. cit.*, Ch. 17, p. 20.

**Assessment figures for this property are derived from the original and supplemental sample. The supplemental sample consists of 162 income-producing improvements.

King County. These distributions illustrate the existence of non-uniformity in assessments as between incorporated and unincorporated areas, within an incorporated area (Seattle), and between and among unincorporated areas. The disparity in assessment ratios is particularly striking for vacant land as a class of property.

¹¹ The implication is that differences in the assessment of real property will occur only where separate assessments are made, i.e., county versus municipal assessors; and that, given the same assessment authority, i.e., county assessor, assessing both urban and rural property, no disparities of consequence will appear in city versus rural assessments. If this implication is correctly drawn, then it expresses a naive view of the assessment process as it exists.

The foregoing brief appraisal of the reported assessment-sales ratios in "Tax Rates of U. S. Cities" leads to the following con-

¹² The coefficient of dispersion is a direct measure of the non-uniformity of assessments. It is determined by measuring the variation between the average assessment ratio of the series and the assessment ratios of the individual items. The sum of the individual deviations from the average assessment ratio is divided by their number to obtain the average deviation of the series. The division of the average deviation by the average assessment ratio gives the coefficient of dispersion.

The larger the coefficient of dispersion the less uniform are assessments.

See Subcommittee on Revenue and Taxation, *op. cit.*, Appendix B, p. 6, for a discussion of the coefficient of dispersion; also Ch. 17, pp. 1-21, for the statistical treatment of the data for King County.

TABLE VI—ASSESSMENT-SALES RATIOS (MEAN) BY INCORPORATED AND UNINCORPORATED AREAS, KING COUNTY WASHINGTON*

Area	Assessment Ratios	
	Single Family Dwellings	Vacant Land
Seattle.....	15.9%.....	21.3%
Other Incorporated Cities.....	14.9	18.8
Unincorporated Areas.....	16.1	18.6

* Subcommittee on Revenue and Taxation, *op. cit.*, Ch. 17.

clusions: I. With reference to the cities (counties) of Washington the reported ratios *do not constitute a reliable general guide* to the existing level of assessments in three of the seven cities, i.e., Seattle, Spokane, and Yakima. In two other cities, i.e., Tacoma and Everett, the differences in the reported ratios with ratios found in the *Study of Real Property Assessments in the State of Washington*

TABLE VII—ASSESSMENT-SALES RATIOS (MEAN) BY AREAS IN SEATTLE, WASHINGTON*

Area	Assessment Ratios	
	Single Family Dwellings	Vacant Land
Northwestern.....	15.4%.....	19.3%
Northeastern.....	15.7	15.6
Central.....	18.7	27.0
Southwestern.....	15.4	23.0
Southeastern.....	15.0	25.0

* Subcommittee on Revenue and Taxation, *op. cit.*, Ch. 17.

are of sufficient size to indicate a significant margin of error. In only two of the seven cities, i.e., Bellingham and Vancouver, are the differences in ratios sufficiently minor to permit the reported ratios to acquire substantial reliability.

2. It is not known to what extent the reported ratios are or are not representative of actual assessment ratios of the other listed cities. The unreliability of the reported ratios for cities in Washington suggests the existence of possibly large margins of error for many of the other listed cities.

3. Reported ratios based upon the subjective opinions of respondents may be

sufficiently misleading as to cause more harm than good. It is to be presumed that the publication of such ratios will lead to inter-city and inter-state comparisons and serve, insofar as the ratios are unreliable, to induce inadequate and incompetent judg-

TABLE VIII—ASSESSMENT-SALES RATIOS (MEAN) BY UNINCORPORATED AREAS WITHIN KING COUNTY, WASHINGTON*

Area	Assessment Ratios	
	Single Family Dwellings	Vacant Land
Southwestern.....	17.2%.....	22.7%
East Lake Washington.....	16.3	13.9
Eastern.....	13.0	13.6
Northwestern.....	15.8	20.5

* Subcommittee on Revenue and Taxation, *op. cit.*, Ch. 17.

ments on the part of citizens and public officials. The warning that the reported ratios "should be regarded only as general guides to the existing situation, rather than precise calculations"¹³ may be useful for the purpose of disclaiming responsibility when the ratios are found to be in error, but will not prevent their use to support irresponsible and harmful conclusions.

4. It is believed that any and all ratios which purport to show the relationship between assessed value and sales value (and which are worthy of publication) should be based upon inductive evidence, not upon personal opinion. Further, some attempt should be made to secure samples which are reasonably adequate statistically with the data given competent statistical processing.

The Citizens Research Council of Michigan, by providing summary data relating to assessment-sales ratios of real property for an extensive list of cities in the United States, could perform a highly useful service, *if properly and competently done*. The foregoing comment is not in criticism of the objective—which is to be commended. Instead, it is directed to the way in which this objective has been served.

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¹³ "Tax Rates of U. S. Cities," *op. cit.*, p. 17.

Land Taxation and Economic Growth in China, 1928-1936

I. Introduction

UNDERDEVELOPED economies are typically caught in the so-called "vicious circle of poverty," a circle running from low income to small savings to small capital accumulations to a continuation of low income. To help break out from this predicament, taxation has the positive role of forcing a higher rate of savings from the meager income of these countries.

Between 1928 and 1936, a period of nine fiscal years during which accelerated industrialization was the major economic objective of the Nationalists, numerous reforms were made in the Chinese tax system to increase its revenue productivity. Yet even as late as 1936, the combined tax collections of all levels of Chinese government amounted to no more than four percent of China's gross national product. This fact, which can be seen from Table I, is surprising, since the corresponding percentages for other underdeveloped economies have been found to be considerably higher. For example, tax collections as a percentage of gross national product in post World-War-II India were reported to have been as high as ten percent.¹ Again, in Guatemala and Chile, the figures for the national government alone were reported to have been 9.3 and 11.4 percent respectively.² Why then was the Chinese tax system during the Nanking period³ unable to absorb a larger percentage of China's gross national product?

One possible answer to this query could be that the expenditures of the Chinese governments were not contributing much to the immediate consumptive needs of the people. If that was the case, the proportionate taxable capacity⁴ would be low in a poor country like China. In this connection it is pertinent to note that the Chinese national government, which was financially far more important than the provincial and hsien (county)

governments combined, devoted roughly 44 percent of its total expenditures during the Nanking period to military purposes.⁵ This fact, it seems, must be taken into account in explaining China's inability to collect a larger share of her gross national product in taxes.

TABLE I—COMBINED BURDEN OF NATIONAL, PROVINCIAL, AND "HSIEN" TAXATION: FISCAL YEAR 1936

Levels of Government	Total Tax Revenues (In thousands of Chinese dollars)	Per Capita Tax Revenues ⁴ (In Chinese dollars)	Total Tax Revenues as a Percent of GNP ⁵
National ¹	755,154	1.51	2.9
Provincial ² , *..	216,337	0.43	0.8
Hsien (County) ³	97,168	0.22	0.3
Total.....	1,068,659	2.16	4.0

¹ Actual collections.

² All provinces except Sikang, Szechuen, Sinkiang and Japanese occupied northeastern provinces.

³ Budgetary estimates.

⁴ The Chinese population was estimated at 450,000,000.

⁵ GNP for roughly comparable area was estimated by T. C. Liu at \$25,850 million. See his *China's National Income, 1931-1936* (Washington, D. C., Brookings Institution, 1946), p. 10.

Sources: For national tax revenues, China, Ministry of Finance, *Annual Reports*; for provincial tax revenues, China, Tsai Cheng Pu, *Tsai Cheng Nim Chien*, Hsu Pieng (Chungking: Kai Chu, 1954), Part XII, Ch. II, pp. 16-104; for hsien tax revenues—Te-huai Chia, *Min Kuo Tsai Cheng Chien Shi* (Changsa: Commercial Press, 1941), II, 642-645.

But there is another explanation which, the writer feels, was at least of equal importance and which has received only scant attention. Specifically, it was the failure of the Chinese government to tax agricultural income more heavily. Even as late as 1936, land tax receipts totaled only \$188 million. The meagerness of this sum becomes apparent

⁴ By "the proportionate taxable capacity" is meant the maximum percentage of real national product that can be withdrawn by the government and still leave the private sector with enough to satisfy its indispensable needs, excluding those satisfied by the government. Cf., Simon Kuznetz, "National Income and Taxable Capacity," *American Economic Review*, Papers and Proceedings, XXXII (March 1942), 42.

⁵ Douglas S. Paauw, "Chinese National Expenditures during the Nanking Period," *The Far Eastern Quarterly*, XII (November 1952), 9.

¹ United Nations, *Mobilization of Domestic Capital in Certain Countries of Asia and the Far East*, Doc. ST/ECAFE/4 (July, 1951), pp. 69-70.

² John H. Adler, Eugene R. Schlesinger, and Earnest C. Olson, *Public Finance and Economic Development in Guatemala* (Stanford: Stanford University Press, 1952), p. 62, Table 19.

³ For convenience, the period 1928-1936 may be referred to simply as the Nanking period, since during those nine years Nanking, not Peiping, was the capital of China.

when one realizes that in 1936 as much as 70 percent of China's gross national product of \$25.9 billion was generated by the agricultural sector and that the land tax was the only tax directly reaching agricultural income throughout the Nanking period.

How was the land tax levied? What was its place in the Nanking tax system? Who ultimately paid the tax? How heavy was the burden of this tax on the agricultural sector of the economy? What light does a study of this tax shed on the low revenue productivity of the Nanking tax system? These are the questions which this paper will attempt to answer.

II. The Land Tax in the Nanking Tax System

Under the traditional Chinese land tax, land was classified into nine categories on the basis of its fertility. Tax rates, which were conceived of as so many dollars per *mou* (the equivalent of 0.152 acre), varied directly with fertility. Thus, the tax was basically a crude attempt to tax agricultural income on a proportional basis.

During the Nanking period this land tax was a part of the tax systems of provincial and hsien governments. It should be noted, however, that prior to 1928 the tax was a national levy yielding roughly one-fifth of total national tax receipts.⁶ Then, in 1928 when the separation between national and local revenues was made for the first time in the history of China's public finance, the land tax was transferred to the provincial governments in exchange for their claims on the *likin*⁷ revenue. The purpose of the exchange was to remove provincial objections to the abolition of *likin*. But, in the separation of revenues, no provision was made for hsien governments. As a result, hsien governments resorted to collecting surcharges on provincial taxes throughout the Nanking period.

As far as revenue is concerned, the importance of the land tax to both the provincial and hsien governments can hardly be over-emphasized. Table II seems to bear out the truth of this statement in regard to provincial finance. It is interesting to note that in all years except one during 1931-1936 land tax exceeded 50 percent of total tax receipts in

provincial budgets. As to the place of land surtaxes in hsien finances, hsien budgets of 1936 put land surtaxes at \$76.6 million, or roughly 72 percent of total hsien tax receipts.⁸

III. The Burden of the Land Tax

The burden⁹ of the land tax on the agricultural sector of the Chinese economy depends partly on the actual amount of tax

TABLE II—LAND TAX RECEIPTS IN PROVINCIAL BUDGET.
(EXCLUSIVE OF MANCHURIA): FISCAL YEARS 1931-1936

Fiscal Year	Amount (In millions of Chinese dollars)	Per Cent of Total Provincial Tax Receipts
1928-1930....	Not available	Not available
1931 ¹	86.85	57.6
1932 ¹	81.71	55.2
1933 ¹	69.36	51.3
1934 ¹	69.34	48.5
1935 ¹	92.83	54.8
1936 ¹	111.58	51.5

¹ Includes all provinces except Kiangsi, Szechuen, Kansu, and Kweichow.

² Includes all provinces except Kwantung, Szechuen, Shensi, and Kweichow.

³ Includes all provinces except Shansi, Kwantung, Kwansi, Szechuen, Shensi, Kansu, and Sinkiang.

⁴ Includes all provinces except Shansi, Kwantung, Kwansi, Szechuen, Shensi, and Sinkiang.

⁵ Includes all provinces except Kwantung, Kwansi, Szechuen, Yunnan, Sinkiang, and Sikang.

⁶ Includes all provinces except Sikang, Szechuen, and Sinkiang.

Source: Compiled from provincial budgets. For a reproduction of 1931-1934 budgets, see P. T. Chen, "Public Finance," *Chinese Year Book 1935-1936* (Shanghai: Chinese Year Book Publishing Co., 1936), pp. 1385-1387. For a reproduction of 1935 budgets, see P. T. Chen "Finance," *Chinese Year Book 1936-1937* (Shanghai: Chinese Year Book Publishing Co., 1937), pp. 704-706. For a reproduction of 1936 budgets, see China, Tsai Cheng Pu, *Tsai Cheng Nien Chien*, Hsu Pieng, Part XIII, Ch. II, pp. 14-104.

revenue collected and partly on two other considerations: the size of agricultural income and the incidence of the tax. The incidence of the Chinese land tax, it seems, can best be studied by first examining what fiscal theorists have said in general concerning the incidence of taxes on agricultural land.

If all agricultural lands are taxed uniformly without any regard to their quality, fiscal

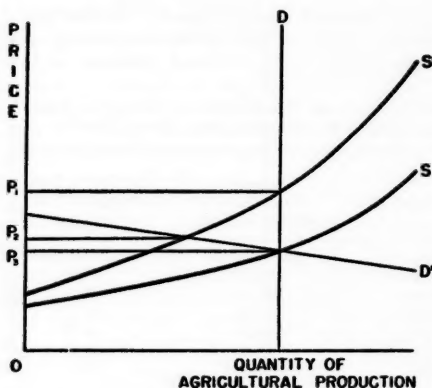
⁶ In the budget for fiscal year 1925, the national government put land tax at \$90.1 million, roughly 23 percent of its total tax receipts. See China, Tsai Cheng Pu, *Tsai Cheng Nien Chien* (Shanghai: Commercial Press, 1935), Part III, Ch. II, p. 119.

⁷ The term *likin* refers to taxes levied on the internal movement of commodities.

⁸ Te-huai Chia, *Min Kuo Tsai Cheng Chien Shi* (Changsha: Commercial Press, 1941), II, 642-645.

⁹ The word "burden" is used in the sense that taxes force a diversion of purchasing power from voluntary personal use and thus restrict the area of private disposal of income. See William J. Shultz and C. Lowell Harris, *American Public Finance* (New York: Prentice-Hall, Inc., 1954), p. 251.

theorists have traditionally argued that, depending on the elasticity of demand for agricultural products, an amount more than the tax, equal to the tax, or less than the tax would be shifted forward to consumers.



Diagrammatically, a uniform tax according to the quantity of land raises the supply curve of agricultural products from S to S^1 in Figure 1. Since the unit cost for the less efficient producers is raised to a greater extent than that of the more efficient producers by a tax on the area of land, the vertical distance between the two supply curves increases with quantity produced. David Ricardo¹⁰ and Edwin R. A. Seligman,¹¹ by assuming a perfectly inelastic demand for agricultural products, both argued that the price increase $P_1 P_3$ will be more than the tax-induced increase in unit cost except for the marginal producers. They concluded, therefore, that more than the total tax collection was passed on to consumers. Von Mering,¹² on the other hand, pointed out the possibility that, if the demand was sufficiently elastic, the price increase $P_2 P_3$ might be so small that it would be less than the tax-induced increase in unit cost even for the most efficient producers. In that case, less than the total tax collection would be shifted to consumers.

However, if the rate of land tax payable on the quantity of land varies with its quality, the position of S^1 in Figure 1 would be a constant distance above S . For von Mering,¹³ this meant that no benefits would accrue to the more efficient producers and that with a demand curve less than perfectly inelastic, the amount shifted to consumers would always be less than the total tax collection. For Ricardo¹⁴ and Seligman,¹⁵ both of whom assumed a perfectly inelastic demand, this meant that the entire amount of the tax, no more and no less, would be paid by consumers.

Which of the above theoretical conclusions is applicable to the Chinese land tax? The answer is "neither." For, in arguing the complete or partial shifting of the land tax, Ricardo, Seligman, and von Mering assumed that the landlord at the margin of cultivation would abandon his farm after the imposition of the tax and transfer his labor and capital to some other lines of activity.¹⁶ This assumption, however, is an unrealistic one to make in studying the land tax in traditional China. To understand why, it is necessary to examine briefly the forces which determine the occupational distribution of those who work.

Theoretically speaking, within the broad limits set by nature a worker will choose that occupation which maximizes his net advantages.¹⁷ These net advantages consist of the net money income of an occupation plus any non-pecuniary advantages minus any such disadvantages. In traditional China, farming was not merely an occupation, it was a highly respected way of life. On the social ladder, the farmers' position was second only to that of the literati. Now, as Simon Rottenberg has pointed out,¹⁸ where social-prestige factors are involved, price changes and relative prices may have a negligible influence on the labor supply to any particular trade. It is therefore the present writer's hypothesis that the supply of farmers in traditional China was extremely inelastic with respect to pecuniary returns.

¹⁰ See von Mering, *op. cit.*, p. 155.

¹¹ See Ricardo, *op. cit.*, p. 120.

¹² See Seligman, *op. cit.*, p. 260.

¹³ In discussing a tax on agricultural net profits, Seligman made this assumption explicit. See his *op. cit.*, p. 262.

¹⁴ George J. Stigler, *The Theory of Price* (New York: The Macmillan Co., 1947), p. 187.

¹⁵ Simon Rottenberg, "Income and Leisure in an Under-Developed Economy," *Journal of Political Economy*, April 1952, 101.

¹⁰ See David Ricardo, *The Principles of Political Economy and Taxation* (Everyman Library ed.; London: J. M. Dent and Sons, 1911), p. 116.

¹¹ See Edwin R. A. Seligman, *The Shifting and Incidence of Taxation* (5th ed.; New York: Columbia University Press, 1927), p. 259.

¹² See Otto von Mering, *The Shifting and Incidence of Taxation* (Philadelphia: The Blakiston Co., 1942), pp. 154-155.

Nor was it probable that the Chinese land tax reduced the supply of agricultural products by inducing the Chinese farmers to exert less effort. For, at near-subsistence standards of living, the marginal rate of substitution of leisure for income is likely to be exceedingly low. Any tax induced leisure-taking in traditional China was therefore unlikely to have been significant.

From the above analysis, the following conclusion regarding the incidence of the Chinese land tax is reached. Since the supply of agricultural products was for all practical purposes unaffected by the land tax, forward shifting through higher agricultural prices could not have taken place. The burden of the tax, therefore, rested on the agricultural sector of the economy.

The fact that the Chinese land tax was not shifted forward to consumers should not, however, lead one to think that the tax bore heavily on the agricultural sector of the economy. That the converse was true can be demonstrated in the following way. During 1931-1936, the average annual land tax receipt was \$161 million¹⁹ while the average annual gross product from agriculture was \$17.07 billion for a roughly comparable area.²⁰ Therefore, even assuming that the land tax rested entirely on the agricultural sector, the relative burden as measured by the average tax rate would only have been approximately one percent of the gross agricultural product.

This state of affairs, it is significant to point out, stood in sharp contrast to the fiscal experiences of certain other underdeveloped countries. For example, when Japan started to industrialize in the second half of the 19th century, heavy land taxation was the device used to wrest sufficient savings from the private sector to finance developmental programs. The tax absorbed as much as

13 percent of the value of a normal crop.²¹ Again, as recent statistics seem to indicate, the burden of the Indian land tax has been approximately 10 percent of India's net agricultural output.²²

IV. Summary and Conclusion

In underdeveloped economies taxation is assigned the positive role of augmenting the flow of savings from the low income of these countries. However, in spite of numerous measures to improve its revenue productivity, the Chinese tax system during the Nanking period was able to absorb no more than four percent of China's gross national product. This was a very low figure compared with the corresponding percentages of other underdeveloped economies.

During the Nanking period the land tax was the pillar of provincial and hsien (county) finances. Its average burden on the agricultural sector, however, was only one percent of gross agricultural product. Since 70 percent of China's gross national product originated from agriculture and since the land tax was the only tax directly reaching agricultural income, the lightness with which the land tax was levied offers an important clue as to why the Nanking tax system was so unproductive of revenue.

Finally, it seems clear from the above analysis that during the Nanking period the Chinese tax policy toward agricultural income was grossly inconsistent with the Nationalists' announced objective of accelerated economic growth.

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¹⁹ Bruce F. Johnston, "Agricultural Productivity and Economic Development in Japan," *Journal of Political Economy*, LIX, Dec., 1951, 502.

²⁰ In 1950-1951, land tax receipts in India totaled 515.8 million rupees. See Phiroze Irani, "Structure and Taxation of Agriculture in India and Pakistan," in Haakell P. Wald (ed.), *Papers and Proceedings of the Conference on Agricultural Taxation and Economic Development* (Cambridge: Harvard University Printing Office, 1954), p. 386, Table 7. In 1948-1949, the only year for which national income data are available, net agricultural product was 41.5 billion rupees. See United Nations, *Statistics of National Income and Expenditure*, Statistical Papers, Doc. ST/STAT/SER. H/5, February, 1954, p. 33.

¹⁹ During 1931-1936, the average annual land tax revenue in provincial budgets was \$85 million. And in 1936, land surtaxes in hsien budgets stood at \$76 million.

²⁰ See Liu, *op. cit.*, p. 10.

The Mortgage Market of Middletown, Connecticut

URBAN mortgage lending has long been characterized by extreme localization. Despite efforts of federal agencies to increase the inter-market mobility of mortgage loan

funds, this localization of the mortgage lending process has prevailed. Yet data on mortgage lending available to the student of mortgage markets usually cover the entire

nation, as for example, the materials in *Housing Statistics* prepared by the Home Loan Bank Board.

Detailed studies of local mortgage markets are relatively lacking. However, five such studies¹ have furnished data which can provide the basis for more intensive investigation of the local mortgage market itself. These studies all concentrated on the residential sector of the mortgage market, however, and only two covered a period long enough to indicate any trends in local financing. To supplement their findings, a detailed investigation into mortgage financing in Middletown, Connecticut, was instituted.

The emphasis in this study was placed on the years 1945-1952, although data were derived for 1920-1945 to provide an historical perspective. For each year covered, a 100% sample of mortgage recordings was taken. These data were supplemented with investigations into records of local banks, and interviews with mortgage officers and mortgagors. Both residential and non-residential mortgage lending were covered, as well as a breakdown between first and junior mortgages. Each lender group was separated, and loan terms averaged where recorded.

The data thus derived have been subjected to further analysis and comparison with those presented in the other studies. This presentation is restricted to a report of the findings for Middletown. The purpose is to provide students of the mortgage market with additional materials with which to work.

The Middletown Community

Middletown is located on the Connecticut River some 15 miles south of Hartford. The population rose from 19,750 in 1920 to 26,600 in 1950, and an estimated 28,400 in 1952. A rapid postwar increase has been attributable primarily to net immigration.

Middletown is a net employing community with local employment concentrated in retail trade, manufacturing, and eleemosynary in-

stitutions. In the postwar period, Middletown's proximity to the heavily industrialized and expanding Hartford and East Hartford area has led to its increased development as a dormitory community. This has resulted in an unprecedented influx of new families into the city.

The postwar years also witnessed a level of construction, and particularly of residential construction, unparalleled in the city's history. It culminated in a record 224 new housing starts in 1952.

To serve the increased demand for mortgage financing which these developments brought, there were three mutual savings banks, two local commercial banks, a branch of a Hartford commercial bank, and one building and loan association in Middletown. There was no shortage of long-term savings in financial institutions in Middletown or surrounding cities. In fact, the savings deposits of these institutions grew more rapidly after 1945 than did their mortgage holdings.²

The discussion here is confined to mortgages made on properties located within the city limits of Middletown. This "locus of property" definition of the mortgage market area has at least the virtue of general practice and comparability with other studies to recommend it.

The Volume of Mortgage Lending

The dollar volume of mortgage lending, by type of property and priority of lien, is presented in Table 1. The volume of mortgage lending in Middletown set successive new records after 1945, except for 1949. Both the number of mortgages and the average size of loan increased.³ Residential lending rose more rapidly than did non-residential lending. Part of the explanation lies in Middletown's transition to a dormitory community for larger centers of employment.

The impact of Regulation X on the dollar volume of residential mortgage lending in Middletown was negligible, although the number of loans made in 1951 did decline slightly. This experience appears to be

¹ J. H. Cover et al., "Small City Mortgage Market: Hagerstown," *Housing Research*, October 1951; P. M. Gregory, *The Worcester Massachusetts Mortgage Market*, Doctoral Dissertation (Worcester: Clark University, 1942); G. B. Hurff et al., *Residential Mortgage Lending—Jacksonville, Florida—First Six Months of 1950*, Housing Research Paper No. 23 (Washington: Housing and Home Finance Agency, 1952); M. M. Johnson, *The Philadelphia Mortgage Market*, Doctoral Dissertation (Philadelphia: University of Pennsylvania, 1951); P. F. Wendt and D. B. Rathbun, *The San Francisco Bay Area Residential Mortgage Market*, Housing Research Paper No. 20 (Washington: Housing and Home Finance Agency, 1952).

² Connecticut State Commissioner of Banks, *Annual Reports*, 1920-1952.

³ All data on mortgage lending in Middletown in this and subsequent sections are derived from *Middletown Land Records*, Town Clerk's office, Middletown, Connecticut. Because of limitations of space, all data cannot be presented here. Detailed tables may be obtained by writing the author directly.

TABLE I—DOLLAR VOLUME OF MORTGAGE LOANS MADE BY TYPE OF PROPERTY AND PRIORITY OF LIEN: MIDDLETOWN, CONNECTICUT. SELECTED YEARS, 1920-1952
\$000

Year	Residential			Non-Residential			All Properties		
	First	Junior	Total	First	Junior	Total	First	Junior	Total
1920.....	408	104	512	392	181	573	800	285	1085
1925.....	925	229	1154	1041	186	1227	1966	415	2381
1930.....	501	190	691	597	317	914	1098	507	1605
1935.....	327	34	361	421	78	499	748	112	860
1940.....	644	54	698	229	59	288	873	113	986
1945.....	843	39	882	571	65	636	1414	104	1518
1946.....	1357	67	1424	869	49	918	2226	116	2342
1947.....	1786	29	1815	655	160	815	2441	189	2630
1948.....	2447	59	2506	800	31	831	3247	90	3337
1949.....	2344	45	2389	840	33	873	3184	78	3262
1950.....	2910	42	2952	502	18	520	3412	60	3472
1951.....	3762	40	3902	673	64	737	4435	104	4539
1952.....	4530	138	4668	1103	281	1384	5633	419	6052

Source: Mortgage Recordings, *Middletown Land Records*, Town Clerk's Office, Middletown, Connecticut.

typical of the smaller mortgage market in which conventional mortgages have predominated, and in which mortgage lending was undertaken on terms more conservative than those called for under Regulation X.⁴

The volume of non-residential lending in Middletown exceeded residential lending until the late 1930's. To ignore the non-residential sector of the local mortgage market, even after 1945, is to eliminate a significant portion of the total lending activity within the market area.

Junior mortgage financing declined sharply after 1930, with a brief resurgence in 1952. With minor exceptions, non-residential junior lending exceeded residential junior lending in dollar volume. For both first and junior mortgages, the greater proportion of non-residential lending was made on commercial and industrial properties.

Mortgage Lenders

Mutual savings banks have been the most important single source of residential first mortgage loan funds, followed by savings and loan associations. After the 1920's, savings and loan associations rapidly increased their share of the residential mortgage market, largely at the expense of individual lenders.

⁴J. H. Cover, et al., *op. cit.*

Savings and loan participation declined briefly in the postwar period because one of the two associations in Middletown was liquidated in 1949. By 1952 outside associations had more than recovered this mortgage business.

Commercial banks have not been heavy residential mortgage lenders in Middletown. Such lending has been concentrated in local banks. Since 1945 it has been primarily in the form of FHA or VA loans. Life insurance companies have made residential loans in Middletown only rarely, despite the proximity of the insurance center of Hartford. The volume of local business has not been sufficient to attract these lenders to the Middletown market.

The share of residential first mortgage lending by individual lenders has declined significantly, particularly since 1945. The ready availability of sufficient funds on favorable terms from other sources has made their participation on a large scale unnecessary. However, virtually all the junior mortgage financing of residential properties has come from individuals, primarily because institutional lenders have developed a reluctance to grant junior residential mortgages.

Mortgage lending by public agencies requires separate consideration because of a

special case prevailing from 1950 to 1952. In these years the state of Connecticut undertook to lend directly on new owner-occupied residences for moderate income families, on terms quite favorable to the mortgagor. The state provided both project development loans and permanent financing for the individual residences. This program made considerable inroads into private mortgage lending during its three years of operation. After 1952, however, mutual savings banks and savings and loan associations returned to their predominant position in residential lending.⁵

A different breakdown of lender participation has occurred on non-residential mortgage financing. Mutual savings banks have again participated, but not so as to dominate the field, and on a declining scale after 1945. Savings and loan associations have been quite unimportant in this segment of the mortgage market.

Commercial banks have played a strong, although sporadic, role in non-residential mortgage lending. Their first-mortgage lending generally increased in the postwar period, while they have avoided junior mortgages since 1940.

Life insurance companies have also provided an important share of non-residential mortgage funds, particularly since 1945. Their non-residential mortgage loans have averaged over \$30,000. This has offset in large part the cost considerations which have kept their lending on residential properties in Middletown at low levels. All of their operations in Middletown have been at the primary market level.

Individuals have accounted for a declining share of first mortgage non-residential lending. Particularly in the postwar period, however, they have been virtually the only source of junior non-residential mortgage funds. The avoidance of such loans by other lenders has accounted for the dominant role of individuals.

Mortgage lending in Middletown has shown a trend toward increased institutionalization for first mortgages, and increased dependence on individuals for junior mortgage funds. The declining importance of junior mortgage financing has led to a net increase in the institutional share of total mortgage lending. Beyond that, eight lend-

ing institutions⁶ have accounted for an increasingly major proportion of mortgage loan volume in Middletown. From 32% in 1920, their share rose to 58% in 1930, 65% in 1940, and 75% in 1950. It fell to 63% in 1952 because of the state lending program mentioned above, but showed signs of immediate resurgence thereafter. These eight lenders have also accounted for over 90% of institutional lending since 1930.

Loan Fund Mobility

An adequate flow of loan funds among markets is basic to the orderly functioning of a mortgage market structure. Even when the local supply of funds is quantitatively adequate to meet local needs, as in Middletown, competition from outside lenders will still provide alternative sources of funds to potential mortgagors, and retard the use of monopolistic or oligopolistic powers on the part of local lenders.

Loan fund mobility is a two-way phenomenon. Unfortunately, because mortgage market areas and mortgagee lending areas rarely coincide, data for a given market area will not reveal the full extent of the outward flow of mortgage funds. This can be estimated only by inference unless every other market into which such funds flow is also studied.

In Middletown the records of institutional lenders show a heavy outward flow of mortgage loan funds in the postwar period. Based on data provided by Middletown banks,⁷ the conclusion has been reached that between 1945 and 1952 a larger volume of mortgage funds flowed from Middletown to other markets than came in from outside.

The inward flow of mortgage loan funds is subject to more nearly precise determination. Mortgage recordings provided the location of the mortgagee, which has permitted a breakdown of mortgage lending by local and "outside" lenders in the Middletown market.

The proportion of mortgage lending by outside lenders has been increasing, especially since 1945. The increase has been greater for residential than for non-residential mortgage lending.

⁵ These include three savings banks, two commercial banks and one savings and loan association in Middletown, plus one savings and loan association each in Meriden and Hartford.

⁷ Specific data cannot be provided here because they have been shown to the author on a confidential basis. Permission has been granted, however, to publish such generalizations as appear here.

⁶ These later years are not covered in detail in the study.

The proportion of non-residential mortgage funds provided by outside lenders has been consistently larger than that for residential loans. The larger average size of non-residential loans helps account for this. Local lenders have been unprepared to grant large-size loans, while the larger loans have attracted such outside lenders as life insurance companies. Less than half a dozen loans of over \$25,000 were extended by local lenders during the years covered.

Outside lenders have also emphasized first rather than junior mortgages. The risks involved have apparently rendered the latter type of loan unattractive. Of the few junior loans made by outside lenders, nearly all have been on non-residential properties, and over half of these have been purchase-money mortgages.

In general, the Middletown market has become more dependent on outside sources of mortgage funds. Local lenders have often avoided local loans in favor of outside loans which appeared to be of higher quality. They have felt that their lending position has permitted them to be selective.⁸ Local lenders have also avoided large loans, whether residential or non-residential.

Mortgage insurance and guaranty have reduced risk for outside lenders on residential properties in Middletown. Over 80% of the residential mortgage loans made by outside lenders between 1945 and 1952 were FHA or VA loans.

Despite increased loan fund mobility in the postwar period, however, the Middletown mortgage market has retained a characteristic of the small city mortgage market in that the major share of mortgage lending has been made by local lenders on local properties.

The Role of Government

Institutional lenders in the Middletown mortgage market are subject to state or federal regulations in regard to mortgage loan size and terms, proportion of assets which may be held in mortgages, and area of lending operations. These regulations are considerably less restrictive when FHA or VA loans are involved. They have had little effect on local lenders, at least, because the loan terms and lending policies of local institutions have generally been more conservative.⁹

⁸ This is based on statements from mortgage officers in lending institutions in Middletown.

⁹ This is based on an inspection of local bank mortgage loan records, as well as data taken from *Middletown Land Records*.

Direct lending by public agencies on any significant scale has been restricted to the temporary HOLC program in 1934-1936, and the equally temporary state program of 1950-1952. Both of these programs were limited to loans on residential properties. Land Bank Commissioner or Federal Land Bank loans have also been occasionally made on farms in Middletown. Despite its essentially urban character, Middletown contained over 60 operating farms in 1952, encompassing over 3,000 acres.

The FHA and VA programs made a belated impression on the Middletown mortgage market. Prior to 1945, FHA loans totaled only \$88,000, and most of those that were made came from outside lenders. After 1945, FHA loans increased in volume, but actually declined in importance. VA loans, on the other hand, grew in importance from 5.9% of total residential first mortgage loan volume in 1946 to 27.4% in 1952. Important in the later years is the fact that all state loans were either FHA-inspired or VA-guaranteed.

Despite their increased importance, the dollar volume of FHA and VA loans has generally been a smaller proportion of total residential mortgage lending in Middletown than in the United States as a whole. FHA and VA loans have come primarily from outside lenders, but the major sources of loan funds in the Middletown market have been local, and local lenders have concentrated on conventional, non-insured mortgages.

Increased use of FHA and VA mortgages in the Middletown market has led to lowered interest rates, longer maturities, and higher loan-to-value ratios on the average. Nevertheless, in 1952 the modal interest rate on residential first mortgages made was still 5%, the modal maturity 15 years, and the modal loan-to-value ratio 66%.

Government has influenced the terms and policies of mortgage lending in the Middletown market, but its primary effect has been to attract outside lenders into the residential sector of the market. This attraction has been concentrated in a relatively few outside institutional lenders. The oligopolistic pattern of residential mortgage lending has prevailed and has, if anything, been enhanced by the activities of government.

The Secondary Market

The focus of attention thus far has been the primary mortgage market, in which mortgage

originations occur and are recorded. The secondary mortgage market involves the transfer of existing mortgage instruments among lenders. In Middletown, such transfers have been rare.

Such secondary market as exists in Middletown is entirely a private affair. By the end of 1952, not one mortgage had been transferred to FNMA. Before 1945, individuals were the primary participants, while in the postwar period local banks have been most active. This activity, however, has amounted to less than 25 transfers per year since 1930. The peak year was 1925, in which 55 mortgage transfers were recorded.

Mortgagees in the Middletown market have tended to hold mortgages to maturity. Even outside lenders attracted in the postwar period have made mortgage loans as long-term investments. The relative abundance of loan funds in the market has resulted in a relative isolation of the Middletown mortgage market from other capital markets, and in an insulation of the mortgage market from the vicissitudes of general money market fluctuations.

Conclusion

The record of the Middletown mortgage market depicts the changing, but still insular, character of the small city mortgage market. All the data derived for this market have not been presented here because of limitations of space. The highlights that have been given should assist in further investigations into the important problems of the functioning of the local mortgage market, and of the efficacy of the federal mortgage programs.

Numerous issues have been raised by the examination and analysis of these data. Questions of the function of size, of the role of non-residential mortgage lending, of the problems of institutionalization and oligopoly, require further analysis for possible solutions. It is only through the accumulation and analysis of local market data, and through comparison with the results of similar studies, that the solutions can be forthcoming.

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Book Reviews



The Future of Cities and Urban Development and Urban Redevelopment: Problems and Practices. Edited by Coleman Woodbury. Chicago: University of Chicago Press, 1953, pp. 764: pp. 525, \$9.00: \$7.50.

These two volumes represent the product of the Urban Redevelopment Study, organized in 1948 under the directorship of Coleman Woodbury and financed by a large grant from the Spelman Fund. After over thirty years of discussion of city planning goals and techniques and roughly a decade of discussion of urban problems viewed from the lens of "urban redevelopment," and after operating programs had been in force for varying lengths of time and with varying degrees of success, the Urban Redevelopment Study was established to summarize and evaluate—through special topic assignments by influential members within the field—the present state of the art of directed urban growth. Such analysis presumably would help give policy direction to urban redevelopment programs which had been inaugurated or were expected to be initiated in communities throughout this country under anticipated legislation (nationally the Housing Act of 1949 made extensive provision for local redevelopment activities.) It would also presumably give understanding and insight to the student of urban communities. The intent of the Study embraced exploration of underlying factors in urban growth and development and consideration of basic objectives and values of urban redevelopment programs as well as examination of operating problems and practices.

Since *The Future of Cities and Urban Redevelopment and Urban Redevelopment: Problems and Practices* were published, one major national housing act has been superseded by another, and there has been a change in the political climate in which national and local programs of housing and development take place. Among those who are concerned with the removal of urban blight, the common

phrase for governmental policy currently is "urban renewal" rather than "urban redevelopment." However, despite the change in problems and in approaches, these volumes remain the major publications to date which focus on this field. The first volume, *The Future of Cities*, is directed to the more theoretical and historical materials; with *Urban Redevelopment: Problems and Practices* concentrating on the present concerns of agencies engaged in operating programs.

The approach of the volumes is one that has been much needed within the field of urbanism: the tone is reflective, analytic, thoughtful. The introductory essay-remarks of the editor to each section and the volumes themselves provide an enlightening diary of the evolution of the work, a type of sociology of knowledge about the progress and development of the Study. This in itself is a most welcome addition to a body of technical literature which has in general been too little conscious of the multitude of decisions and value premises which have shaped its proclamations.

Much of the content of the volumes is not "new," nor was it intended to be so. A summary, an evaluation, by its very nature must review materials previously prepared and put forth once again ideas that have been previously stated. The nineteen authors were selected because of their expertise: it is fitting, for example, that Catherine Bauer, who has long been provocatively raising questions about the direction of urban policy, should do so here, and that Victor Jones, who has written so much about metropolitan government, or Allan Twitchell, who has expounded a measurement of housing quality, or William Ludlow, who has written at length on the relationship of density to urban services, should restate material that is familiar to them. The Urban Redevelopment volumes in this fashion present in a handy "package" major portions of technical subjects but do not, for the most part, add substantially new techniques or methods or data to the technical literature which has previously been scattered in

diverse publications. This is by no means meant to minimize the importance of re-statement: the accretion of knowledge must come slowly and cumulatively—it is often a rash impatience and a desire for novelty which fragment a field of study, yielding only isolated and non-comparable data or insights which cannot be built upon. The Urban Redevelopment volumes, on the other hand, are meant to be built upon, to be surpassed at a later stage of development of thought and practice.

Thus the type of review of the literature in the section on industrial location (prepared by Coleman Woodbury and Frank Cliffe) and on the attitudes of urbanites (by William Slayton and Richard Dewey) provide the basis for new investigations and syntheses, partially by summarizing what has been found to date, partially by pointing to gaps in knowledge. In these sections, new data are presented. In the section on industrial location, for example, the authors were able to extend the Creamer-Goodrich investigations of the 1930's (two of its major publications being *Migration and Economic Opportunity* by Carter Goodrich, University of Pennsylvania Press, 1936, and *Is Industry Decentralizing?* by Daniel B. Creamer, Study of Population Redistribution, Bulletin 3, University of Pennsylvania Press, 1935) to 1939 and 1947 data. Woodbury and Cliffe reveal, among other findings, the slight effect of the war years on the total industrial location pattern. Cautions are given to the urban planner and redeveloper in interpreting national tendencies and trends and applying them to local scenes, which may vary considerably.

In the section on "Urban Redevelopment and the Urbanite," an outline of possible attitudes toward redevelopment proposals is presented as well as the approach and findings of original sample surveys undertaken in Milwaukee and Denver.

Another type of essay included in the volumes is that on the legal bases to guide operating practice in land acquisition and control—these are Charles Ascher's monograph on "Private Covenants in Urban Redevelopment" and Ira S. Robbins' and Marion Perry Yankauer's "Eminent Domain in Acquiring Sub-division and open Land in Redevelopment Programs." Both of these are fresh in the city planning literature and in their skilful use of language, mediating between legal terminology and

the need for simplified explanations for local officials and other laymen.

Perhaps the essays that will be most turned to by the non-specialist are those in the section of "goals, design and strategy" authored by Catherine Bauer, G. Holmes Perkins, Henry S. Churchill, Robert C. Weinberg, Arthur B. Gallion, and Vernon De Mars, and Coleman Woodbury's "The Background and Prospects of Urban Redevelopment in the United States." As a whole, the section on "goals, design and strategy" is intimate, personalized, stimulating and insightful rather than rigorous or scholarly: these are the cautions and observations of persons who know their subject because they live it, rather than the product of academic research. The sparsity of footnotes and bibliography is an indication of the informal nature of these essays, which are complemented by Coleman Woodbury's broadly ranging and documented historical interpretation into the social-political-economic complex of urban life. The largest gap in coverage in the volumes is the lack of material on the market situation in which urban redevelopment activities must take place.

While the volumes are directed to four groups, (1) public officials who are in positions to influence urban redevelopment policies, (2) civic leaders who are concerned with policy and method, (3) prospective investors in redevelopment projects, and (4) professional students of urban life and institutions, it is difficult to gauge the effectiveness of the materials except for the last group.

Possibly policy-makers such as major public officials and investors would be more inclined to own the volumes than to read them. The assembled materials are impressive but may seem ponderous for people pressed for time who seek immediately pointed policy implications. But for the person wishing detailed introductions to key problems of urban growth and planned change, the volumes are invaluable.

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Real Estate Appraisal. By Paul F. Wendt.
New York: Henry Holt and Company,
1956, pp. 320.

Wendt gives us, in this book, a scholarly study of the valuation formula with an important side excursion into the methods by which to compare the economic backgrounds and structures of our cities. He follows impeccable reasoning and reveals his intimate association with both the applied and theoretical world of real estate.

What he does is to give us an historical review of the evolution of thinking on valuation method. He quotes Hurd, Zangerle, Bonbright, Babcock, Ratcliff, McMichael, May, Schmutz, Marston, Atkinson, Weimer, the FHA Underwriting Manual, and the writers of the American Institute of Real Estate Appraisers and compares their views. From this analysis he comes to the conclusion that we should return in our appraising to a greater stressing of market comparison.

Early pages deal with the concepts of value and contrast subjective or use value and objective or market value. The idea of warranted or justified value is explored and put in its place. While he concedes that value must have many meanings, he believes, quite properly, that the only truly objective value is market value.

Wendt talks about the traditional three approaches and cites their limitations. He points out that the current vogue of the three-fold system is more a rejection of the income process than sound in its own right. "There is no logical reason for expecting that the 'three approaches' to value will yield identical or nearly identical value estimates." The devices of correlation, including the "compression of differences" are rightly declared to be artificialities.

Middle chapters show why the cost method has come into a dominant position in FHA and VA procedure in spite of the tough problems of handling depreciation and other variables. They describe the difficulties encountered when the appraiser puts reliance on income methods and they plug the use of gross rent multipliers for certain appraisal problems. Wendt says the market comparison method is dying in practice but should

not be permitted to do so because it is the ideal process. His most important treatment of city and neighborhood growth and economic backgrounds is too modestly kissed off by the author with the statement that generalizations are, at present, too difficult to make.

His broad conclusion is that our value-estimating methods should emphasize market comparison. And he suggests, in one fascinating chart near the end of the book, that the correct appraisal process comprises the assembly of comparable sales data and the formulation of a judgment with respect to market value, with the use of the replacement-cost approach only for special appraisal purposes and to find a ceiling on market value, and with the use of the income-capitalization approach only if a reasonable income forecast can in fact be made. Most thoughtful appraisers will agree.

Here we have a much-needed and long overdue book of first quality. While it may not serve as a textbook, it will be invaluable for required collateral reading by students and practicing professionals. We can confidently hope that the volume will serve to stimulate anew the examination of the valuation formula and clear many of the cobwebs from current appraisal thinking. This book will become one of the few classics in this difficult field.

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Price Discrimination in Selling Gas and Electricity.
By Ralph Kirby Davidson. Baltimore,
Maryland: Johns Hopkins Press, 1955,
pp. 218 plus appen.

This is the most extensive treatment of the fascinating and important subject of utility price and cost differentials to be published for many years. Dr. Davidson has wisely excluded such commonly associated subjects as rate base, rate of return and the controversy over "public" power and tax burdens in order to concentrate.

He has read not only fellow economists, but several engineers. With the unfortunate exception of material on distribution costs and diversity, his bibliography is catholic, and gives promise of a synthesis of the two

disciplines' approaches to resource utilization.

Thus he accepts the engineers' primary cost allocation: capacity, energy output, and customer, and he extends to all three the economists' marginal cost—usually associated only with output. His conclusion—that the best allocation of resources will be made by non-discriminatory prices recovering long-run marginal capacity, energy, and customer costs from each load—may not, however, convince anyone who did not believe so already.

It seems that Dr. Davidson throws away his best argument by refusing to concede that the engineers have much the same objectives and—despite imperfections—have made progress. In the last decade prices of electricity, approximately constant in current dollars, have been cut more than half in terms of real dollars and inputs: coal, copper, steel, cement and labor. This can be interpreted as magnificent confirmation of his theory. But not so by him. He finds the engineers have made a botch of it resulting in "a substantial and widespread misallocation of productive resources." Substantial, compared to what? His sole standard, the touchstone by which all non-conformity is damned, is peak responsibility. He admits practical difficulties, but solves them to his own satisfaction. He considers generating peaks only. Somehow, his "off-peak customers" who "subsidize" the rest do not (and *will not*) create distribution facility peaks differing substantially from generating peaks.

His other "practical" suggestion is a time-of-day differential. In an example, the energy rate to be applied from 10 to 12 in the morning and 5 to 7 in the evening, November 24 through February 7, and 9 to 11 in the morning and 1 to 4 in the afternoon in June, July and August, would be seven times the "off-peak" rate, applicable the rest of the year.

The hoped for shifts in consumption (thousands of air-conditioner switches flipped at 4:01 P.M. July 1st, for instance) may, he acknowledges, bring new peaks which he would handle with a "third rate" to be raised by "annual adjustment" to the peak-hour basis. "But," he says, "Before this point is reached, increased capacity should not be provided to satisfy the rising demand in the former off-peak hour." This proposed refusal of load is far the most radical of

Davidson's suggestions. It highlights the difference between "consumer-centered" rate-making and his "station-centered" analysis. In basing rates on individual maximum demands (assumed demands for small consumers) utilities do indeed run risks that improvement in individual load-factors will mean impairment of group load-factors. Such "anti-social" shifts as are emphasized in his figures 18 and 19 *can* take place. The question is whether this actually happens often enough to justify confusion that might make F.D.R.'s attempted change in the date of Thanksgiving look routine. This is not to imply that the time-of-day tariff should not remain in the price designer's tool kit. It's been there since General Electric was promoting it in 1900. It might be the very thing for New York subway fares or for the peculiar heating problems in Britain. But in the United States electric loads are approaching that described by the New York Commission in cancelling a time-of-day differential (Case 15671 April 7, 1952): "Considering the total load of the system, the only material variation between the on-peak and the off-peak periods exists between midnight and 6 A.M."

JOHN ALDEN BLISS

Price and Rate Design,
East Greenbush, N. Y.



Urban Sociology. By Egon Ernest Bergel.
New York: McGraw Hill Book Company, Inc., 1955, pp. 558, \$6.50.

Land economics, like other social sciences, is affected by a broad range of forces. There is a danger that specialists in one field, confining themselves to the books or articles written by other specialists in their own branch of knowledge, will fail to discover contributions made in other sciences. Urban sociologists, urban geographers and real estate students, while stressing different objectives, have made significant advances in subjects related to land economics. Richard M. Hurd, a mortgage banker, and Ernest W. Burgess, a sociologist, made important advances in analyzing city structure. (Richard

M. Hurd, *Principles of City Land Values*, New York: The Record and Guide, 1903; Robert E. Park, Ernest W. Burgess and Roderick D. McKenzie (Editors) *The City*, Chicago, Illinois: University of Chicago Press, 1925.) This concentric zone theory of urban structure, and my own sector theory, are standard subject matter in sociology textbooks, but these theories are somewhat neglected in the literature of land economics.

On the other hand, the economic base concept, which is now so popular in land economics and planning literature, is infrequently referred to by sociologists.

Professor Bergel's book on *Urban Sociology* is an important contribution because it widens our horizon and describes in clear, concise and logical terms, not only the physical structure of cities, the problems of slums, housing and planning—all of which are closely related to land economics—but also factors indirectly affecting land economics such as the urban family, urban religion and urban recreation, which are most interesting for the general reader as well as for the specialist.

Broad as his coverage is, however, Professor Bergel is apparently unfamiliar with the literature on the economic base for his classification of cities by function is generalized and makes no attempt to calculate what percentage each basic activity contributes to total employment, as did John W. Alexander in his excellent monograph on Madison, Wisconsin. (*An Economic Base Study of Madison, Wisconsin*, Madison, Wisconsin: Bureau of Business Research, 1953.)

The failure of specialists to become aware of advances in related fields emphasizes the value of bibliographies such as those compiled by Katherine McNamara, Librarian, Department of City Planning and Architecture at Harvard University. Also there is a need for students in any field of urban land economics to gain a fresh insight into land economics principles by studying first-hand some urban region and by examining the specific political, social and economic factors that are having an influence upon an actual concrete situation.

HOMER HOYT

Homer Hoyt Associates,
Washington, D. C.



Introduction to Economics for Agriculture. By John Donald Black. New York: The Macmillan Company, 1953. pp. 727, \$6.00.

As is widely known, John D. Black has a deep and abiding concern for advancing the economic literacy of the non-economist in agriculture. This concern has prompted inquiry into practices and requirements in regard to economics teaching in the agricultural colleges; additionally, a considerable proportion of Professor Black's voluminous writings are designed to be communicative to the non-economist. *Introduction to Economics for Agriculture* is intended specifically for this purpose.

Black's book is aimed most directly at instruction of the agricultural college student who intends not to specialize in the economics of agriculture. For him it would replace general principles texts, thus to avoid excessive "refinements of principles and factual background in the urban economy . . ." Yet, the author considers his work versatile enough to be a foundation for further work in agricultural economics and, at the same time, to be useful to the "educated farmer or his equivalent."

It seems fair to surmise that the user-image that dominantly influenced the book was the agricultural college man or woman ultimately destined to be a farmer or a farmer's wife. But, if so, this does not mean that the book is narrow or provincial—only that in its broadness the perspective and selection of topics are much influenced by the author's supposition of the prospective economic interests of farm men and women. The result of this selection and perspective is to cast an implicit fundamentalism over the work. The seven chapters on production (*farm* production, that is) tend to be in the key of how *we producers* do our work; in contrast, the nine chapters on commodity distribution tend to the key: *those people* and their inefficiencies that we producers must contend with. Consistently, food and farm family living receive the emphasis in most of the chapters on consumption. The farmer-to-be orientation is less apparent in the chapters that deal with money, banking, credit, economic cycles, income distribution, and such topics of general economics. Perhaps this

should be judged a weakness of these chapters, if the basic orientation of the book is actually warrantable.

Whether the orientation is warrantable is a question of some considerable significance. It is consistent with the tradition of agricultural college curricula which implicitly and subconsciously, if not explicitly and consciously, is that—irrespective of specialized major—the main business is the teaching of prospective farmers. Increasingly, as the number of farmers declines and concurrently the number of occupations peripheral to production agriculture rises, this curriculum perspective gets further out of step with reality. Hence this book, as meritorious as it otherwise may be, shares the obsolescence problems of educational policy in the agricultural colleges.

Whether and how to present generalized introductions to agriculture and to economics in agricultural college curricula that are becoming increasingly specialized are issues not readily resolved. "Agriculture," whether in terms of farming or the larger industrial complex that John Davis has uneuphoniouly called *agribusiness*, is virtually incomprehensible as a field of study. "Economics" as an aggregate is about equally unmanageable and rapidly growing worse. What and how much economics should be taught the non-economist: How much theory is enough? Too much? Too little? To say that a little theory may be worse than none, deplorably trite as it is, is nevertheless defensibly true. At best, what theory and how much has been an arbitrary compromise shared varyingly and unresolvedly by textbook writer, curriculum planner, and individual instructor.

This reviewer holds the hypothesis that a revolution in agricultural college curricula cannot lag far behind the rapidly advancing revolution in agricultural industry. Further, this hypothesis holds that the prospective curriculum revolution will center on two points: (a) acknowledgement of the mounting importance of professional and technical careers within an enlarged concept of agricultural industry; (b) a de-emphasis on the separateness of farmers and farming in the national economy and society.

If the above hypothesis is fulfilled to any considerable degree, it should accelerate a reformation in the teaching of economics. The reformation that is consistent with the above hypothesis would mean the substantial abandonment of elementary or intro-

ductory principles courses as they are now taught, either as economics or as agricultural economics. In substitution, economics would be presented in two categories: (a) descriptive surveys of economic institutions, structures, and functioning—without any of the paraphernalia of analysis—designed to be sufficient for the non-economist and still useful background for later economics specialization if it occurs; (b) rigorous courses in theory and analytical method designed for the initiation of those intending to develop an economic specialization.

If this becomes the direction of change in economics teaching in the agricultural colleges, Professor Black's book could serve either program in part but neither one very well. Though not designed specifically to do so, the orientation chapters and those on public economics go a long way toward satisfying the survey need. With the omission of the more theoretical treatments—which are not adequately rigorous for initiating the prospective specialist—the remainder, in this reviewer's opinion, is still the best available descriptive treatment of the structure and functioning of United States agriculture, notwithstanding the fact that others have more recently tried their hands at this more limited and specific objective.

The book is nicely colored with the views, the mellowed judgments, and some of the episodes of the author. Regrettably, the communication of these segments of wisdom seems to be increasingly unfashionable, particularly through the printed page. This is a great misfortune, for the world thereby becomes the drearier.

VARDEN FULLER

University of California,
Berkeley, California



Flood Problems and Their Solution Through Urban Planning Programs. By Robert Wilson Siler, Jr. Tennessee State Planning Commission, Publication No. 262, September 1955, pp. 48, \$1.00.

The material for this publication was gathered for an MA thesis in planning at the University of North Carolina. Various forms of assistance were given to the author by the Tennessee Valley Authority, "because of the potential far-reaching contribution [of the

study] to the formation of logical policy for urban development in the Tennessee Valley and elsewhere" The Tennessee State Planning Commission then published the present booklet "as a service to the communities of this State" and to promote the cause of land planning and zoning in flood hazard areas. The booklet was written by a planner—or prospective planner—and is directed mainly at planners. In training and in practice planners seem to have largely overlooked the desirable results that can be achieved by flood-plain zoning; the opportunity for services in this field is stressed throughout this booklet. Apparently planners, like members of other disciplines, are beginning to realize that all is not well and sound in several of our big federal agencies that pre-occupy themselves with so-called flood-control and related programs.

The booklet is divided into three chapters. The first chapter, "Background," stresses our mounting flood losses despite mounting expenditures for so-called flood control. These increasing losses result largely from rapidly growing urban centers, many of which are spreading heedlessly into flood hazard areas. It is also recognized that physical structures to control or lessen flood hazards cannot be brought to all communities; hence the recommendation that planning and zoning be used to prevent certain types of developments in high risk areas.

In Chapter II the author shows the relation between land use, wise and unwise, and possible flood losses. Since land use can be planned, flood losses can also be controlled in large measure by proper planning and zoning. Use of the police power seems proper in this program because objectives relate to the "public health, safety, morals or general welfare." A number of places are listed where the police power has been used to regulate use of flood areas.

Planning and zoning, of course, should be based on good studies and the best available data. Chapter III lists and describes a variety of data, largely hydrological, needed to project planning and zoning into flood hazard areas. From the text one would gather that these data can readily be translated into a firm plan of land use. Unfortunately data are rarely so complete and reliable that sound policy is clearly indicated.

Students of water policies will note with interest the two agencies that supported and

published this study. The Tennessee River has been dammed more than any other major U. S. stream to achieve a large means of flood protection. Much of this "protection" has been achieved by flooding land permanently that formerly flooded only at intervals. Many of us suspect that what that agency now seems to approve for cities along lesser streams—zoning flood hazardous areas—might with equal logic have been applied to much of the flood plain along the Tennessee River.

With the above auspices in mind, it is also refreshing to find such statements as: "When persons knowingly develop the flood plain, should the public be expected to afford protection for their unwise acts, or subsidize the losses which they suffer as a result of floods?" (p. 14) Protective works "in too many instances have been planned without consideration of less costly measures which could have been utilized." (p. 42) "Present flood control policy is such that the Federal Government is saddled with practically the entire expense of protective works This means that the Federal Government taxes everyone to pay for the folly of a few." (p. 44)

The author seems to feel that many communities on lesser streams will have to find the solution to their flood problems in flood-plain zoning because costs will prove greater than benefits that can be demonstrated. On this point he may well under-estimate the resourcefulness of the wizard boys employed by the big-dam building agencies. They are doing right well in justifying all sorts of fantastic projects today and they have come a long way in a short time justifying almost anything that seems to make votes. It hardly seems likely that the heavy pork barrels that have been floating up and down our major streams will long be excluded from the branches and forks that gather the waters in the upstream areas. Perhaps the super floods we had in '55 on the East and West coasts will eventually do more to bring some sense to our flood-loss mitigation efforts than all the logic that can be mustered by the critics of our present programs.

Although the author makes a good plea for flood-plain zoning to reduce flood losses, his studies and examples are directed almost entirely to urban centers. If zoning is good for cities to reduce flood losses, why isn't it equally good for rural areas with respect to

farm and other improvement? In some of our rolling lands of the West, major dams can and will destroy from 50 to 75 percent of our best agricultural lands before significant flood-loss reduction has been achieved. Zoning has possibilities here but these are barely mentioned.

The booklet here reviewed is not a definitive piece of work but is welcomed as another warning on whither we are drifting—even cascading—because of the manipulations of major federal agencies who find the only solutions of the complex problems they are dealing with in their enabling legislation.

Unfortunately the publication suffers from poor editorial attention. A number of figures do not appear on the pages listed on page vii under "List of Illustrations." Fig. 11 lacks a legend or title and puzzles the reader until he goes sleuthing through the text and other figures for explanatory material.

WALTER M. KOLLMORGEN

University of Kansas



Crude Oil Pipe Lines and Competition in the Oil Industry. By Leslie Cookenboo, Jr. Cambridge, Mass.: Harvard University Press, 1955, pp. VI, 177, \$4.00.

The present volume is the second in the Harvard University Series on Competition in American Industry. Starting with the proposition that "a prerequisite to a discussion of public policy for any industry is a knowledge of the cost conditions under which the industry operates" (p. 6) the author presents a thorough study of the cost of operation of crude oil pipe lines which should be of no less interest to students of economic theory than to those concerned with problems of the oil industry. Production functions relating line diameter, pumping horsepower, and "throughput" (volume carried per unit of time), together with the corresponding short-run, intermediate-period, and long-run average cost curves, were derived for lines ranging from eight to thirty-two inches inside diameter. Since the long-run average cost curve was found to decline over the range of throughputs covered, the conclusion was reached that "economies of scale characteristic of the operation of pipe lines require that oil be carried conglomerately in as large

quantities as possible in large-diameter line," and that pipe lines should not be run at throughputs appreciably below capacity (p. 31).

The author next considers the structure of the petroleum industry, i.e., the ownership, size, and location of the industry's capacity. The point is made, among others, that the overwhelming dominance of the major companies in the ownership of crude oil pipe lines does not mean a corresponding degree of control over the independents in the production and refining branches of the industry. Thus a maximum of 48 per cent of the refining capacity of independents is dependent upon pipe lines owned by the major companies and, if it is assumed that independents located in the crude oil production areas could use the local supplies to the limit of their needs, the degree of dependence falls to 20 percent.

In a chapter entitled, "The Controversy over Crude Oil Pipe Lines," the author summarizes and evaluates the arguments of Rostow in favor of divorcement of crude oil pipe lines from the major companies by anti-trust action and those of Wolbert in favor of forcing the major companies to operate their lines as true common carriers at low rates. Cookenboo does not favor either of these policies. With respect to Rostow's proposal he holds that it has not been adequately demonstrated that divorcement would lead to the entry of new firms into the refining business, or that competition would be much keener if new firms did enter. Furthermore, he doubts that independent pipe line companies would provide services to new fields, and also doubts that the lines, if provided, would be built on an economical scale or charge rates as low as those charged by the integrated companies. Wolbert's proposal is rejected on the grounds, among others, that a decade of experience has shown that public utility regulation cannot achieve "cost" rates for pipe lines with any precision, and that rates at a "cost" level from the standpoint of the independents would yield a return lower than that to which the major companies are entitled.

As an alternative to the foregoing policies Cookenboo proposes a "compulsory joint venture system embracing all companies, large or small, which are willing to pay a share of the initial outlay. Non-integrated refiners who are unwilling to accept

a share can use any common carrier facilities owning interests in the line. These might not materialize, but they are no less likely than if completely non-integrated capital had to be obtained to build large-diameter common carrier lines" (p. 168). In fact, outside interests would be more likely to participate in a joint venture because of the opportunity provided to spread the risk. Furthermore, enforcement might well be unnecessary in view of present tendencies toward joint participation in pipeline projects and the economic incentive of lower cost to be obtained through combined transportation. It is recognized that the joint venture arrangement might be held to be illegal under the antitrust laws, in which case an exemption should be sought. Cookenboo holds that the joint venture plan has the double advantage of making possible the transportation of oil at minimum cost while at the same time relieving existing and potential market-oriented, non-integrated refiners from dependence upon the transportation facilities of integrated companies.

In view of the informative data presented, the thoroughness of the analysis, and the fresh approach adopted, the reviewer is of the opinion that the present volume is indispensable to those concerned with public policy problems of the oil industry.

ROBERT W. HARBESON

University of Illinois



Minerals in World Industry. By Walter H. Voskuil. New York: McGraw-Hill Book Company, Inc., 1955, pp. vii, 316. \$5.75.

Professor Voskuil sets out to explain the influence of minerals and their products on economic productivity. The properties of mineral products and their conditions of production, especially iron and its alloys, are viewed as exerting a profound influence on economic productivity and the development of society.

Most of the book is loosely related to this orientation, however. The questions to which the bulk of the book appears to be directed are the following: What are the uses of the mineral? Where is it produced? Where is it found? How is the mineral handled? Where

does it move? About half of the book is devoted to the energy minerals and minerals used in making steel.

This approach tends to neglect other important questions involving the elasticities of the various demand and supply functions and the process of investment in the industries. That is, how intensely are the mineral and its products wanted? How would the patterns of mineral use and production differ if the conditions under which production now takes place were to change in various ways in the future? How does the industry react to changed conditions?

Prices and costs receive little attention, although the comments that are made about grade and type of ore and about transportation do have a bearing on cost. The chapters on coal and oil are best in this respect.

A chapter is devoted to U. S. mineral policy. Although each mineral is regarded as presenting special problems, it is said that U. S. mineral policy must recognize rising costs, that the U. S. is not self-sufficient in mineral requirements, and that Russia's power is increasing.

Private industry is expected to play an important role in combating rising costs but, it is asserted, ultimately costs will rise because of the use of low-grade ore, less accessible ores, and ores more costly to process than those now being used. The change may require government initiative in research and "... may also require government participation in exploration, development, and production of hitherto uncommercial ores." (p. 300) The kinds or amounts of activity the government might appropriately undertake are not explored.

The book contains some careless statements and a few items are omitted that might have been covered. For example, it is said that "... the Federal and state geological surveys failed to find minerals at home during World Wars I and II" (p. 23) Actually some significant finds were made and important information was accumulated under federal auspices.¹

Although the 1952 report of the President's Materials Policy Commission² is probably the

¹ See *Resources for Freedom, A Report to the President by the President's Materials Policy Commission*, June 1952; Vol. I, p. 29 and Vol. V, pp. 1-3.

² *Ibid.*

most comprehensive discussion of U. S. minerals policy that is now available, it is not mentioned or discussed. Nor is there a reference to the Report of the Mid-Century Conference on Resources for the Future.³

ORRIS C. HERFINDAHL

Falls Church, Virginia



Machines of Plenty; Pioneering in American Agriculture. By Stewart H. Holbrook. New York: Macmillan, 1955. pp. 246. \$4.00.

Farm production, country life, rural-urban relations, and agriculture's economy have been transformed by the revolutions in agricultural technology. The development and application of farm machinery in America during the last century and a quarter is a great and dramatic story deserving the attention of our most gifted writers and researchers. Stewart Holbrook's keen eye for the drama of history has turned to the unceasing development of agricultural machines. Holbrook is an entertaining story teller and his book is a bin full of anecdotal odds and ends about thresher sales promotion, the history of the moldboard plow, the etymology of "tractor," bonanza farming and many other things related to the subject of farm machinery. Though aware of the wide significance of mechanization, the author touches only lightly such matters as concentration and standardization in the farm equipment industry, and the influence of machinery in expanding farm production and the increasing size of farms. Mentioned barely or not at all are the displacement of farm labor, the satisfactions of power farming, and the relative efficiency of production in farm and factory. While moving quickly past certain significances of farm mechanization, Holbrook roams leisurely down attractive bypaths into osage orange hedges, lightning rod frauds, threshing rings, and county fairs.

Machines of Plenty, when it is focussed upon the agricultural machine industry, is a friendly account of the J. I. Case Co. of Racine, Wisconsin, which subsidized the

volume. The book is not in the familiar company history form and this reviewer prefers to have a "commercial" identified with a caveat.

Stewart Holbrook has done research in the Case Company records, he interviewed people associated with the J. I. Case story, and he turned up some valuable fresh material concerning this part of the farm equipment industry. The Case Company's threshing machine, horse powered engine for activating threshers, and steam tractor are bygone institutions loaded with significance as well as nostalgic emotion. Holbrook exploits this side of the story yet he keeps his readers informed about the corporate development of the J. I. Case Co. and its continuing contribution to a persisting technological revolution in agriculture.

JAMES H. SHIDELER

University of California, Davis



Economics of Transport. By Emory Troxel. New York: Rinehart & Company, Inc., 1955, pp. 768, index.

Professor Emory Troxel, Professor of Economics at Wayne University, author of *Economics of Public Utilities*, published in 1947 by the same publisher, has written a book emphasizing primarily economic analysis rather than historical, legal and business practices.

The subject of transportation is treated through the analysis of cost and demand, public and private allocations, substitute and marginal limit relationships, rather than upon the description and comparison of the services, bases of charges and the regulation of the various types of carriers.

Pricing of transportation services, organization of carriers and governmental regulation are discussed by subjects rather than by types of carriers or regulatory agencies. The attempt is made to relate economic analysis to legislation and administrative regulation.

The first part of the book, consisting of over a third of the volume, is concerned with a discussion of transportation economics generally—including costs, supply and demand, allocation of resources and related subjects, although there is a considerable amount of historical data.

³ *The Nation Looks at Its Resources.* Report of the Mid-Century Conference on Resources for the Future (Washington: Resources for the Future, Inc., 1954). The report was reviewed in the May 1955 issue of this journal.

A second part of the book, something less than a third, is concerned with the regulation or public utility controls of transportation, which considers all forms of transportation and approaches the subject from both the historical and the analytical-critical paths.

The final portion of the volume deals with rates and fares, emphasizing particularly price discrimination among goods, places or locations, and distances, contrasting economic and public policy in these problems of rate-making.

Throughout the text the author employs economic, mathematical analysis to the data. The methods used are unconventional and, to this reviewer who is conditioned to the more conventional approaches, less easy to comprehend.

In the opinion of this reviewer the book serves a useful purpose in continuing the search by students interested in transportation economics for a way of helping in the comprehension and interpretation of the relationship of economic principles and transportation services, costs, prices and regulation.

An interesting and significant portion of the book deals with the analysis in economic terms of the demands for the movement of goods and persons.

The fifty-seven pages of references indicate the scope of the author's examination of the literature of transportation economics, history, and economic theory in the difficult task of relating these materials.

G. LLOYD WILSON

University of Pennsylvania



Rural Electrification (2 volumes) United Nations Technical Assistance Administration, Economic Commission for Europe, Food and Agriculture Organization. Geneva, Switzerland: 1954, pp. Vol. I, 163; Vol. II, 165. Illustrated. Copies may be obtained from the Sales Section, European Office of the United Nations, Palais des Nations, Geneva, Switzerland. \$1.25 (US).

These two volumes on rural electrification represent a tabulation of achievements in fourteen various European nations and the United States, prepared by experts attached to the United Nations Economic

Commission for Europe for use in so-called underdeveloped nations. They consist of three technical sections: (1) generation, (2) transmission and distribution, and (3) the application of electricity to various farm operations; and a fourth on financial and administrative aspects of rural electrification. The treatment is exceedingly general. The study contains no universal solutions but rather warns the engineer-reader that he must take into account special conditions in his particular country.

The sections on generation, transmission, and distribution contain information on generating costs (with particular attention devoted to the performances of small thermal and hydro-electric power plants), highline construction techniques and costs, and system network diagrams. The sections stress standardization of equipment and large-scale or regional planning. Finally, they warn engineers, on the basis of prior consumption growth records in developed nations, not to plan too rigidly when designing and laying out new transmission and distribution networks but to allow for considerable flexibility to meet future demands. In the rural electrification of this country a significant factor has been the unprecedented growth in KW-demand. The Rural Electrification Administration designed distribution systems on the assumption that the average individual member consumption would be around 50-kwh per month. Many Wisconsin projects were built to accommodate no more than 100-kwh per month. But by the end of 1954 the average individual member consumption of the 19 REA-financed distribution projects in Wisconsin had surpassed 320-kwh per month! As a result, many projects are rebuilding or heavying up for the second and third time. The same is true for privately-financed rural distribution systems.

The section dealing with the application of electricity to agriculture covers some 20-odd farm operations ranging from plowing and dragging to pest control with particular attention paid, in each case, to the loads likely to be imposed and the consumption likely to be involved. General illumination in and around the barns and workshop receives one-page mention. No mention is made of electricity in the farm household. No rural electrification study is complete without a discussion of the application of electricity to household operations. A recent

United States Department of Agriculture study, *Electricity on Farms in the Eastern Dairy Area of Wisconsin* (Agriculture Information Bulletin No. 143, Washington, D. C., October 1955), reveals that four appliances—electric range, refrigerator, water heater, and home freezer—used from 40 to 45 percent of all electricity consumed by the farms covered in the study. (see p. 19)

The section on finance recognizes that rural electrification is chiefly a problem of improving farm income so as to enable farmers to pay for the cost of highline construction and purchase load-building appliances. "It is an almost general phenomenon that the electrification of farms is hindered much more by the cost of connection and equipment than by the level of electricity tariffs." (Vol. I, 56, 61, 150.) The American experience 1935-55 is a case in point.

The reader may ponder why the study devotes so little attention to the solution of the financial aspects of the problem. It suggests four general methods of finance or

some combination of two or more of them: (1) state subsidies such as long-term low-interest loans, (2) an excise tax on the sale of electricity to all types of consumers, (3) cash contributions by the rural customers, and (4) foreign capital; with the warning that no one method can be recommended since rural electrification is bound up in such institutional factors as the nation's standard of living, the society's regard for rural electrification, and the government's financial policy. It is refreshing, indeed, to find such respect for national institutions pervading a United Nations economic and technical advisory report. In conclusion, the study recognizes (1) that rural electrification is a social problem, (2) that initiative for the solution must originate with the government, and (3) that the costs must be borne by all taxpayers. In the reviewer's opinion, this is the most significant contribution of the two volume study.

LEMONT K. RICHARDSON

University of Wisconsin

Among Books Received

Fluid Milk Marketing. By George Max Beal and Henry H. Bakken. Madison, Wisconsin: Mirmir Publishers, Inc., 1956, pp. 568, \$7.50.

PROGRESS IN HOUSING AND TOWN PLANNING IN EUROPE

A Message and an Invitation from the Mayor of Vienna to Interested Readers

THIRTY years ago, the Congress of the International Federation for Housing and Town Planning was last held in Vienna; that meeting has, to this day, influenced and affected the numerous discussions on, and efforts towards, achieving better housing for all as well as an improved organization and a more purposeful development of the entire Vienna area.

Many fundamental changes in the sphere of housing and town planning have since taken place throughout the world; outmoded ideas have been abolished; the knowledge gained in new experimentation has been exploited; the results have, in numerous cases, proved to be most successful and many schemes are now prosperous and thriving. However, there was much which at the time was considered to be up-to-date and modern but which proved to be short-lived and died a natural death.

There are, however, two schemes which have proved their worth above all others; *social low cost housing*, i.e., the provision of dwellings on a non-profit basis, and *the idea of re-dressing congestion in our cities*, i.e. *the garden city conception of town planning*. These two schemes have become permanent factors wherever efforts are being made or measures taken within the sphere of housing and town planning; they are closely interrelated and cannot be considered singly. Thus, in Vienna, where public social housing came into its own and was first made powerfully manifest to the benefit of the population only after World War I, statistics show that during the last thirty years no less than 17 percent of the total Vienna housing has been constructed on the basis of these principles, and this despite the damage and destruction inflicted by the recent war.

Over and above this, Vienna has come to another and far more vital realization, namely, that it is not merely the single dwelling and social improvement in the housing conditions that must be taken into account, but first and foremost it is the city as a whole, its structure, its urban and suburban layout, to which, today, serious consideration must be given.

Vienna, the capital of the Austrian Federal Republic, has invited the International Federation for Housing and Town Planning to make this city the seat of its XXIIIrd Congress.

As Mayor of Vienna I invite you to participate in the Town Planning Congress and to study and witness for yourself the gigantic changes this city is undergoing, an experience which may stand you in good stead when improvements in your own country are under contemplation.

Above all I extend this invitation to you because we are always most happy to give our friends from all parts of the world a warm welcome in Vienna.

In this spirit of goodwill and friendliness I invite you on behalf of the Vienna Municipal Authority and all Vienna citizens to attend the XXIIIrd Congress of the International Federation for Housing and Town planning in Vienna in July 1956, and convey to you their best greetings.

JANAS

Mayor of Vienna

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